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INTEGRATED BATTLEFIELD EFFECTS RESEARCH FOR THE NATIONAL TRAINING CENTER

Appendix D—Functional Requirements for the National Training
Center (NTC) Integrated Battlefield Command and Control
Simulation (IBCCS) System

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11. TITLE (Continued)

Battlefield Command and Control Simulation (IBCCS) System

12. ABSTRACT (Continued)

Demonstration of the system for combining live and notional battalions for training higher level staffs in integrated battlefield (IB) command and control:

Functional requirements analysis for IB command and control simulation Appendix D
Report on the demonstration Appendix E

Analysis and design of field simulators for nuclear and chemical warfare:

Technical and operational impacts of field simulators Appendix F
Capability of off-the-shelf paging system to communicate at Ft. Irwin Appendix G
Designs of field simulators Appendix H

Adaptation of nuclear and chemical software to other Army training models:

Feasibility of transferring ARTBASS Code from Perkin-Elmer to VAX Appendix I
Division/Corps training simulation functional analysis Appendix J
ARTBASS conversion to VAX Appendix K
Requirements specification for adding nuclear and chemical models
to ARTBASS Appendix L

This research provided the following products:

Software which models nuclear and chemical environment and effects with appropriate fidelity and timing for training and which is ready for installation on NTC computers.

A demonstrated capability for combining actions of real battalions with computer simulated notional battalions for training brigade/division commanders and staffs.

An analysis of the impacts of using field simulators at the NTC for nuclear and chemical warfare training, and the designs of the selected simulators (i.e., common control system, radiometers, dosimeters, chemical detectors).

Analysis of the application of nuclear and chemical models to other Army battalion training models; conversion of the ARTBASS model to operate on the VAX 11/780; incorporation of the nuclear and chemical models into ARTBASS; and demonstration of the nuclear and chemical models using ARTBASS.

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CONVERSION FACTORS FOR U.S. CUSTOMARY TO METRIC (SI) UNITS OF MEASUREMENT

To Convert From	To	Multiply By
angstrom	Meters (m)	1.000 000 x E -10
atmosphere (normal)	Kilo pascal (kPa)	1.013 25 x E +2
bar	kilo pascal (kPa)	1.000 000 x E +2
barn	meter ² (m ²)	1.000 000 x E -28
British thermal unit (thermochemical)	joule (J)	1.054 350 x E +3
cal (thermochemical)/cm ²	mega joule/m ² (MJ/m ²)	4.184 000 x E -2
calorie (thermochemical)	joule (J)	4.184 000
calorie (thermochemical)/g	joule per kilogram (J/kg)*	4.184 000 x E +3
curie	giga becquerel (Gq) +	3.700 000 x E +1
degree Celsius	degree kelvin (K)	$T_K = T_C + 273.15$
degree (angle)	radian (rad)	1.745 329 x E -2
degree Fahrenheit	degree kelvin (K)	$T_K = (T_F + 459.67)/1.8$
electron volt	joule (J)	1.602 19 x E -19
erg	joule (J)	1.000 000 x E -7
erg/second	watt (W)	1.000 000 x E -7
foot	meter (m)	3.048 000 x E -1
foot-pound-force	joule (J)	1.355 818
gallon (U.S. liquid)	meter ³ (m ³)	3.785 412 x E -3
inch	meter (m)	2.540 000 x E -2
jerk	joule (J)	1.000 000 x E +9
joule kilogram (J/kg) (radiation dose absorbed)	gray (Gy)*	1.000 000
kilotons	terajoules	4.183
kip (1000 lbf)	newton (N)	4.448 222 x E +3
kip/inch ² (ksi)	kilo pascal (kPa)	6.894 757 x E +3
kts	newton-second/m ² (N-s/m ²)	1.000 000 x E +2
micron	meter (m)	1.000 000 x E -6
mil	meter (m)	2.540 000 x E -5
mile (international)	meter (m)	1.609 344 x E +3
ounce	kilogram (kg)	2.834 952 x E -2
pound-force (lbf avoirdupois)	newton (N)	4.448 222
pound-force inch	newton-meter (N-m)	1.129 848 x E -1
pound-force/inch	newton/meter (N/m)	1.751 268 x E +2
pound-force/foot ²	kilo pascal (kPa)	4.788 026 x E -2
pound-force/inch ² (psi)	kilo pascal (kPa)	6.894 757
pound-mass (lbm avoirdupois)	kilogram (kg)	4.535 924 x E -1
pound-mass-foot ² (moment of inertia)	kilogram-meter ² (kg-m ²)	4.214 011 x E -2
pound-mass/foot ³	kilogram-meter ³ (kg/m ³)	1.061 844 x E -1
rad (radiation dose absorbed)	gray (Gy)*	1.000 000 x E -2
roentgen	coulomb/kilogram (C/kg)	2.579 740 x E -4
shake	second (s)	1.000 000 x E -8
slug	kilogram (kg)	1.459 390 x E -1
torr (mm Hg, 0° C)	kilo pascal (kPa)	1.333 22 x E -1

*The gray (Gy) is the accepted SI unit equivalent to the energy imparted by ionizing radiation to a mass and corresponds to one joule/kilogram.

*The becquerel (Bq) is the SI unit of radioactivity; 1 Bq = 1 event/s.

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SECTION 1 INTRODUCTION

1.1 SCOPE

→ This document defines the functional requirements for a command and control simulation system which will be used to support the training of brigade and battalion command staffs in an integrated battlefield environment (including conventional, nuclear and chemical warfare) at the National Training Center (NTC). *California. Keywords: Army Training; Nuclear Strike; Military doctrine; Army foundation*

1.2 OVERVIEW

1.2.1 Purpose - The use or threatened use of tactical nuclear or chemical weapons profoundly impacts modern tactical warfare. Because of their lethality, the employment of such weapons may greatly alter the course of an engagement and even change the outcome of the entire conflict. Currently, there is no practical means to provide commanders and their staff with the Command, Control, Communications and Intelligence (C3I) experiential background they will need to fight, survive and win on the integrated battlefield. The thrust of this effort is to provide a realistic integrated battlefield command and control environment to support the overall integrated battlefield training goals at the NTC.

The operational concepts to support integrated battlefield command and control play at the NTC encompasses use of a computer-aided tool to assist controllers and role players in creating and maintaining realistic integrated battlefield command and control interactions between the trainees and their larger tactical C3I structure. Specifically, an Integrated Battlefield Command and Control Simulation (IBCCS) capability will be added to current NTC operational software to perform this function.

The IBCCS will focus on simulating integrated battlefield command and control processes at the division level and above since it is at these echelons where integrated battlefield planning and execution is centered. The IBCCS will allow the user to create and execute realistic scenarios to provide the context of the field exercises being conducted on the ground at the NTC. The IBCCS will provide the appropriate nuclear/chemical strike warning messages and the tactical battlefield intelligence required to support their interpretation and use.

The IBCCS will be designed to support real time free-play operations. The user will be able to interactively manage the integrated battlefield scenario to respond to

changing training objectives and BLUEFOR/OPFOR actions. The IBCCS will employ the same kind of man-machine interfaces as used for the other NTC operational software. Defense Nuclear Agency (DNA)/Training and Doctrine Command (TRADOC) approved nuclear/chemical environments and effects simulation models will be used exclusively, and accepted BLUEFOR and OPFOR employment policies will be followed.

The IBCCS will be designed to be compatible with operational NTC software and the associated data base structures. Specifically, IBCCS will interface with and complement the Exercise Monitoring and Control (EMC), Training Analysis and Feedback (TAF), and Command Battle Simulation (CBS) software functions. EMC/TAF software is currently in place and functioning at the NTC. CBS has been defined as a future requirement which will support brigade and battalion task force command/staff training using coordinated Engagement Simulation (ES) and Command Post Exercise (CPX) techniques.

The overall unit training concept is still evolving at the NTC as operational experience is gained. Accordingly, the IBCCS will be designed with the flexibility to accommodate a spectrum of training concepts ranging from decoupled battalion ES and live fire exercise all the way up to a full brigade level combined engagement simulation and command post exercise. This latter capability is the most stressing from a design point of view and therefore, will be used as the training concept baseline for the purposes of this effort. It should be pointed out however, that this training concept is still only under consideration as one of several viable concepts at the NTC.

The NTC training concept is discussed in the following subsections as a foundation for the design requirements analyses discussed in the remainder of this document.

1.2.2 Live Engagement Simulation - In the live ES environment, the BLUEFOR battalion task force is pitted against a professional and dedicated Opposing Force (OPFOR). The BLUEFOR and OPFOR engage each other with simulated combined arms weapons. Direct fire weapons are simulated using the eye-safe laser weapon simulators and sensors which comprise the Multiple Integrated Laser Engagement System (MILES). MILES accurately represents the audio and visual cues and weapon effects (suppression and casualties) which occur in real combat. Indirect fire weapon effects are calculated by software algorithms and weapon effects for indirect fire are assessed in the field by controllers. BLUEFOR and OPFOR players are fully instrumented for the purpose of estimating their position and recording weapon firing, kill and commo keying events. This data is transmitted back to the EMC/TAF (a command, control, and

analysis facility) for further processing. After Action Reviews (AARs) are presented to participants in order to provide training analysis feedback.

1.2.3 Combat Battle Simulation - The CBS system concept addresses the entire battalion combined arms command/staff training problem. While live engagement simulation is currently implemented at NTC, the CBS function is still defined as a future requirement. With CBS, all key brigade and battalion command and staff functions can be exercised in a coordinated real time environment where combat information and intelligence is oftentimes incomplete, inaccurate, and delayed. Both human and automated interfaces between the battalion command/staff and its operational environment will be considered.

Controllers will be responsible for entering command and control requests into the model (via interactive menu, in response to requests from battalion or brigade command/staffs. During a training exercise, the Army personnel performing as controllers will be positioned around their respective consoles in the Environmental Protection Shelter (EPS). Participating brigade and battalion command/staff trainees will be situated in their own Tactical Operations Center (TOC) located in the field. Role players, who represent the subordinate commanders, will implement the decisions made by the command/staffs being trained and will provide feedback from the simulated battlefield to the command/staffs. Similarly, role players of superior command elements will assign missions, allocate resources and provide battlefield intelligence and information from collection assets organic to their command levels. The number and functions of role players will vary depending upon the units which are participating in the exercise and the role which the IBCCS system is playing.

Role players will perform their functions by means of controllers who will interact in real time with the tactical simulation model through interactive color graphics and alphanumeric displays to obtain feedback on the tactical situation. The computer simulation will be controlled by graphic tablets and a complete set of command and control computer programs which allow the controller to enter a variety of commands. These commands will update the necessary model variables to carry out specific commands, and thereby change future battle outcomes.

This controller/role player approach serves to isolate the command/staffs being trained from the mathematical simulation and provide the realism needed to replicate operational conditions.

The CBS concept will provide the capability of modeling tactical force activities and simulating location and event data. This data shall be included in an Exercise Coordination and Control/Training Analysis Feedback (ECC/TAF) history which combines events from both real and notional units. In cases where CPX units are participating in the exercise, typical tactical communications will be used between the CPX command/staffs and the CBS role players. Tactical communications will also be used between role players and the brigade command/staff in instances where a live CPX staff is not available.

1.2.4 Combined Live and Simulated Exercises - Figure 1 presents an overview of the NTC concept for integrated battlefield training. This figure depicts the full spectrum of training and includes provisions for training CPX command/staffs in addition to the brigade and the live battalions. The key elements, which span the four echelons from division through company, are shown. Elements inside the heavy dark dashed line are real elements being trained (exercised) at the NTC. Elements outside of this line are simulated (notional) elements whose combat functions and operations are modeled. If CPX units will not be available for an exercise, the system can still be used to facilitate integrated battlefield training for the live battalions and the brigade command/staff.

As shown, the real elements which are on the ground and a part of the NTC training exercise can include:

1. a BLUEFOR brigade command staff with organic supporting elements,
2. two BLUEFOR task forces with associated command elements, tactical forces and support elements,
3. two BLUEFOR task force staffs (CPX), if available,
4. selected BLUEFOR support elements, and
5. an OPFOR motorized rifle regiment with its associated command elements, tactical forces, and support elements.

Notional elements which might be simulated to provide a realistic environment include:

1. a BLUEFOR division headquarters and its associated elements,

2. a BLUEFOR Direct Air Support Center (DASC) to interface with the brigade command posts,
3. adjacent BLUEFOR brigade and battalion command elements (to the degree they interact with the real elements being trained),
4. selected BLUEFOR Direct Support (DS) and General Support (GS) units attached to the brigade,
5. other BLUEFOR Fire Direction Centers (FDCs), as required to support brigade fire support operations,
6. up to two BLUEFOR task force staffs, if CPX units are not assigned, and
7. the equivalent missing OPFOR elements (i.e., two notional motorized rifle regiments) needed to round out the engagement context.

The flexibility of the NTC IBCCS concept allows the means to reconfigure the simulation to either accommodate additional notional elements or substitute real for notional elements. This capability is needed to respond to the changing requirements at the NTC and the varying configuration of units coming to the NTC for training.

1.2.5 The Role of IBCCS Training - Currently at Fort Irwin, two live task forces participate during the same time period in 12 to 15 days of training exercises. Each exercise consists of several offensive and defensive operations of varying lengths; the longest being about five to six hours on the ES ranges and the shortest being approximately one hour on the live fire range (defensive operations). Although the two battalions undergo training simultaneously, they currently participate in only two brigade-level operations side by side. The amount of training the brigade can receive has been restricted due to the desirability to make the most advantageous use of the varying terrain of the two ES ranges, to offer several types of both offensive and defensive operations, to conduct live fire, and due to the limited number of days spent at the NTC. Other limiting factors to coordinated two-battalion operations are inter-range time-distance considerations and the availability of only one live fire range.

Figure 2 reflects the scheduling flexibility of the brigade staff and either two CPX battalion staffs in conjunction with one of the live battalions, or one CPX battalion staff with two live battalions. In the figure, the cross-hatched bars represent the location of the two

Unit	History	Range	Day of Brigade Rotation at NTC												
			1	2	3	4	5	6	7	8	9	10	11	12	13
Bn #1 (Live)	#1	Primary ES													
		Secondary ES													
		Live Fire													
Bn #2 (Live)	#2	Primary ES													
		Secondary ES													
		Live Fire													
Bde and 2 Bn TOC's plus: Bn #1 Bn #2	#3	Primary ES													
		Primary ES													
		Primary ES													

(1) Bn #1 could move from the Primary ES to the Secondary ES Range any time from day 5 to day 10, changing places with Bn #2. The Bde exercise will include either Bn #1 or Bn #2 during day 5 to day 10, whichever is currently on the Primary ES range.

Figure 2. Use of NTC range facilities for brigade training.

live battalions at the NTC during a typical 13-day cycle. Assumptions underlying this schedule are that each live battalion spends a few days preparing for and conducting a live fire exercise, and nine days on the ES ranges.

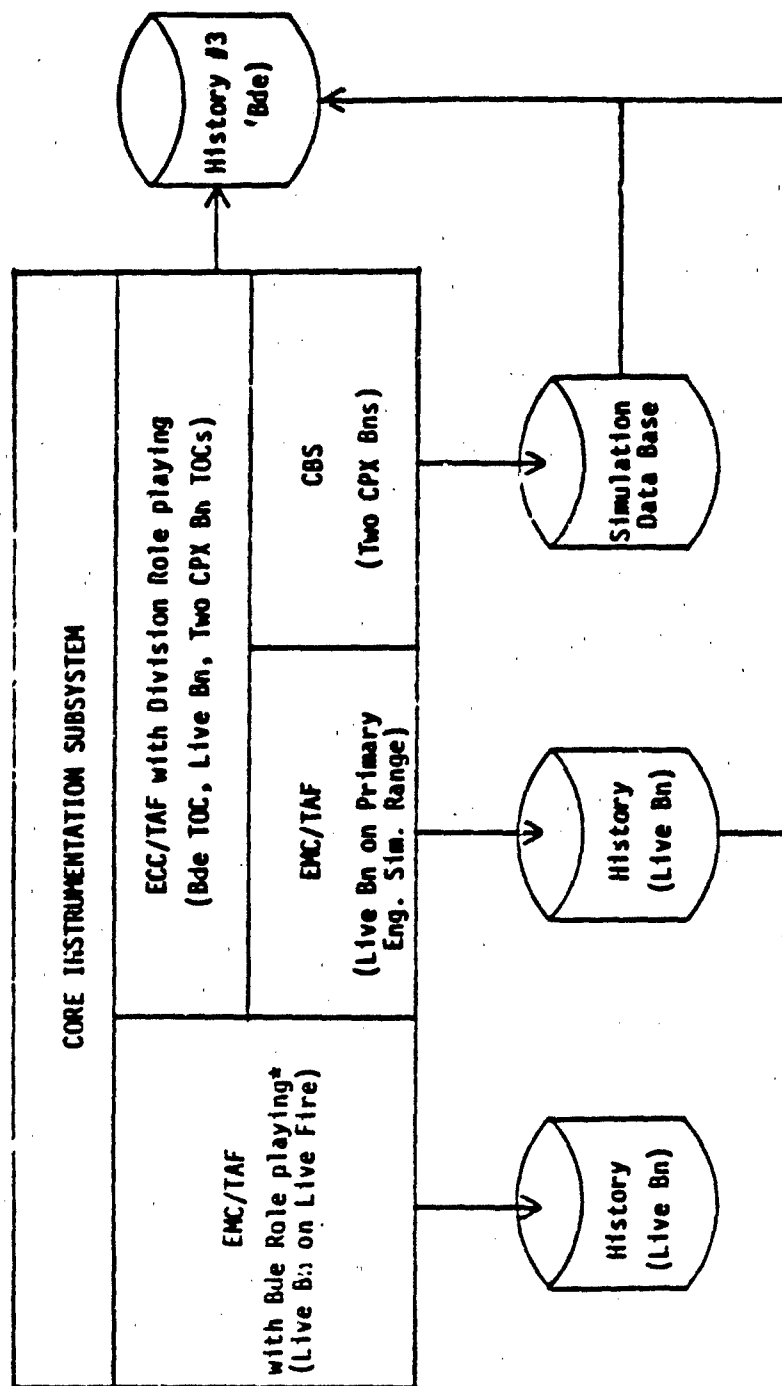
Within the Core Instrumentation Subsystem (CIS), the capability of exercising a brigade can be conceptualized as shown in Figure 3. Each live battalion shall be assigned to an EMC/TAF facility. The brigade controlling the battalion on the live fire range shall be role played from the EMC/TAF. When an EMC/TAF is training battalions on the ES range, role play of the brigade shall be accomplished through the IBCCS system and not through the EMC/TAF. The EMC/TAF responsible for the training of a particular battalion in an exercise shall not change. All activities of each live battalion shall go into a history, such that the two EMC/TAFs can control, monitor and prepare AARs for their respective battalions. Data from the histories representing the live battalions in the ES and any simulated battlefield events shall be used to update a third history.

The ECC/TAF facility shall be responsible for overall control and coordination of the brigade exercise and for the preparation and presentation of AARs for the brigade staff and any participating CPX battalion command/staffs. Data from the simulation data base shall be used to update a third history. This third history shall consist of a combination of data from the live battalions on the ES ranges and the simulated battalions. It shall provide all data required to control and monitor the entire brigade exercise (both live and simulated) and to prepare AARs for any participating CPX battalion staffs and the brigade staff.

Figure 4 shows in greater detail, the manner in which information flows between the ECC/TAF and the related EMC/TAF and CBS facilities. This information flow will provide the data required for AAR presentations to each of the entities being trained.

An important aspect of the IBCCS concept is the autonomous operation of the facilities within the CIS. Only when battlefield events of major importance occur (such as nuclear and chemical attacks) is there a requirement for direct coordination between the EMC/TAF and CBS facilities. Otherwise, the EMC/TAF can concentrate on the activities of the live battalion units, and the CBS can concentrate on role-playing units supporting the CPX battalions and brigade.

The ECC/TAF will monitor the entire picture of the brigade battle to ensure that both live and simulated BLUEFOR and OPFOR units stay in correct alignment so that



* During the rotation period, when both task forces undergo ES, EMC/TAF does not role play brigade. The task force occupies the secondary ES range and the history contributes to the ECC/TAF history (History #3)

Figure 3. Use of CIS facilities for brigade training.

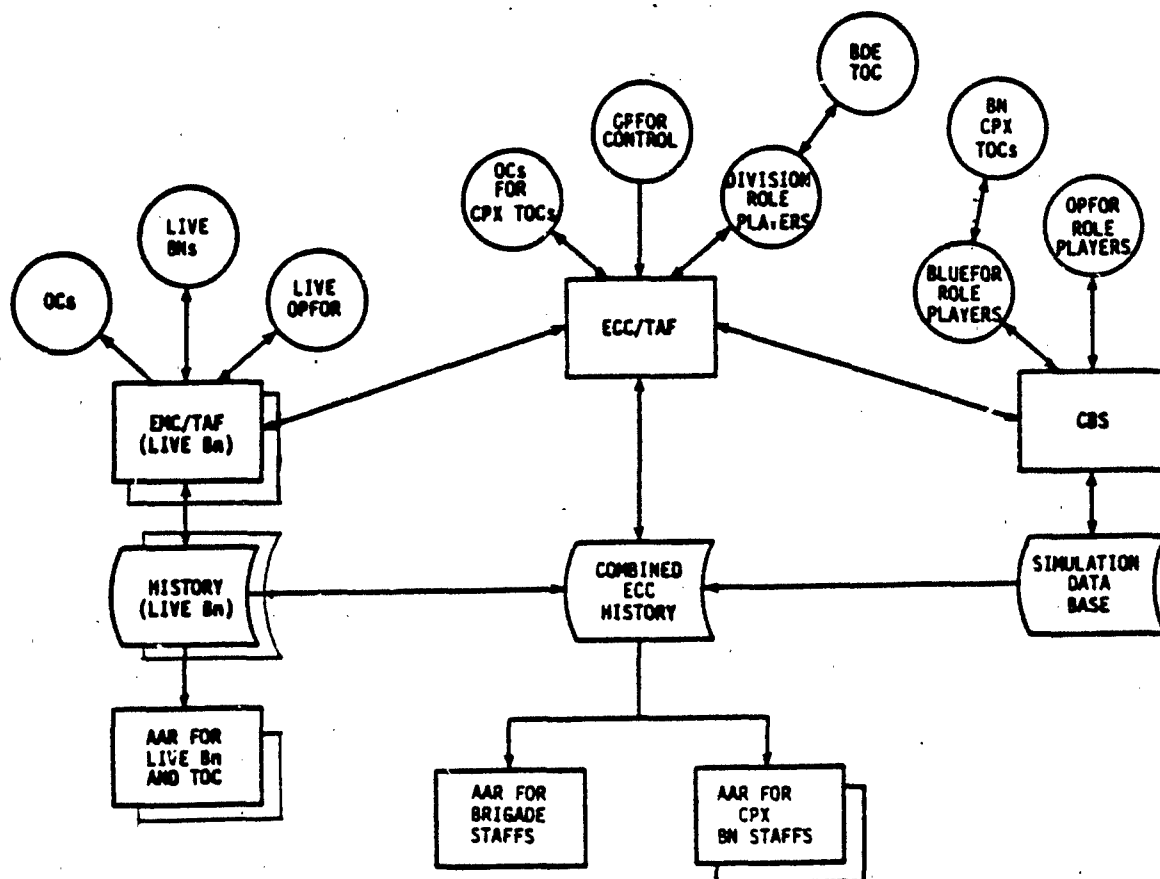


Figure 4. Exercise information flow leading to AAR presentations.

the brigade TOC perceives a single, coordinated battle rather than two separate, possibly overlaid battles. The ECC shall control this alignment by role playing the division and influencing BLUEFOR actions through issuance of frag orders, and by communication with OPFOR controllers in the EMC/TAF and CBS facilities to cause a coordinated OPFOR front.

1.3 OPERATIONAL CONCEPTS

The following sections describe the operational concept for fire support, combat support/combat service support, intelligence, operations, and nuclear, biological, and chemical events when the simulation model is used to provide training for CPX units.

1.3.1 Fire Support Operations

1.3.1.1. BLUEFOR Field Artillery Operations - Field Artillery (FA) represents the brigade commander's principal and most responsive indirect fire capability. Field artillery units will be assigned to the brigade by the division at the start of an exercise through operations orders. These units will provide either direct or reinforcing support to the brigade and its battalions.

The Fire Support Team (FIST) will initiate a call for fire to the field battalion FDC on the Battalion Command/Fire (Bn C/F) net. This net is monitored in the maneuver battalion TOC by the Fire Support Officer (FSO) for mission clearance or cancellation. The FDC will direct the mission to be conducted on a fire direction net (FD 1, FD 2 or FD 3). The mission cancellation could be communicated on either Bn C/F or FD nets. Figure 5 depicts the manner in which role players enter into the information flow with the staffs being trained.

A call for fire which is initiated by the FIST role player may be conducted by a battery (btry) role player, the ES battery, or, in the event of massed fires, by all batteries. When the target fire is within the zone of action covered by a CPX battalion TOC, the mission will be entered into the model. If the target fire is within the zone of action covered by a live battalion, the EMC/TAF operators will handle the mission. The model shall generate alerts regarding BLUEFOR fires on OPFOR in the zones of action of the simulated battalions.

A call for fire initiated by an ES FIST may be conducted by a battery role player, the ES battery, or, in the event of massed fires, by all batteries. The EMC/TAF will, in all cases, monitor the field artillery communications to determine if the mission was authorized

and; therefore, should be entered into its Indirect Fire and Casualty Assessment (IFCAS) model. All requests for fire initiated by the ES FIST will be recorded for use in the AAR. If calls for fire are requested in the area covered by simulated units, the fire mission is entered at the CBS controller stations.

Figure 6 depicts the coordination which will be required between the EMC/TAF, ECC/TAF, and CBS functions during training.

1.3.1.2 BLUEFOR 4.2-Inch Mortar Operations - The call for 4.2-inch mortar fire will be initiated by the FIST, and will be sent to the 4.2-inch mortar FDC (4.2 FDC) on the 4.2-inch mortar fire direction net (4.2 FD). The 4.2 FD net will be monitored in the battalion TOC by the FSO for clearance or cancellation. Cleared missions will be conducted on the 4.2 FD net, and will be entered into the model. The model shall generate alerts regarding BLUEFOR fire on OPFOR.

Figures 7 and 8 illustrate these relationships.

1.3.1.3 BLUEFOR on OPFOR Single Task-Cobra/TOW Request - As illustrated in Figures 9 and 10, in Cobra/TOW operations the company/team role player will provide mission requests to the Fire Support Element (FSE) on the Bn Cmd net. If the request is approved, the battalion FSE will forward it to the division's Main FSE.

Approved requests against simulated OPFOR units will not actually be flown. The EMC/TAF aviation controller (avn ctrl) will notify the Army aviation coordinator at the fire support station, and the coordinator will enter the mission into the model. The model shall generate alerts regarding BLUEFOR support fire and Air Defense (AD) fire on OPFOR and OPFOR support fire and AD fire on BLUEFOR.

1.3.1.4 BLUEFOR on OPFOR Extended Operation-Cobra/TOW Request - For extended COBRA/TOW operations, the company/team will request Cobra/TOW support from the battalion FSE on the Bn Cmd net. The battalion FSE will evaluate the request and, if the request is disapproved, will notify the company/team on the battalion command net.

If the request is valid but local assets are not available, the battalion FSE may forward the request to the brigade FSE using the single task-Cobra/TOW request sequence discussed above (paragraph 1.3.1.3).

For a valid request with locally available assets, the battalion FSE will transmit mission data to the EMC/TAF aviation company controller who is acting as the aviation company advisor. He, in turn, will pass the data to a

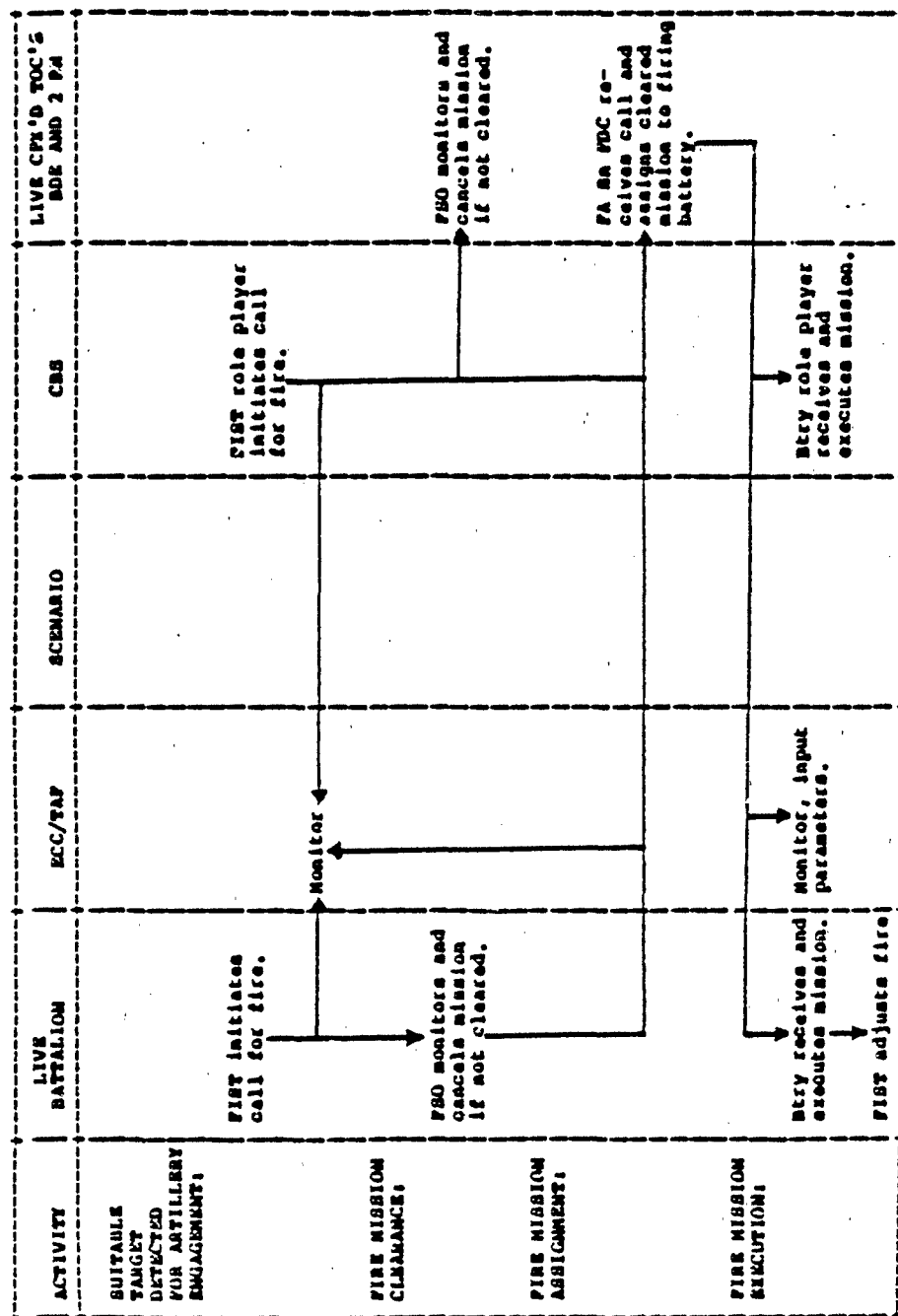


Figure 6. Operational concept for field artillery operations - BLUEFOR.

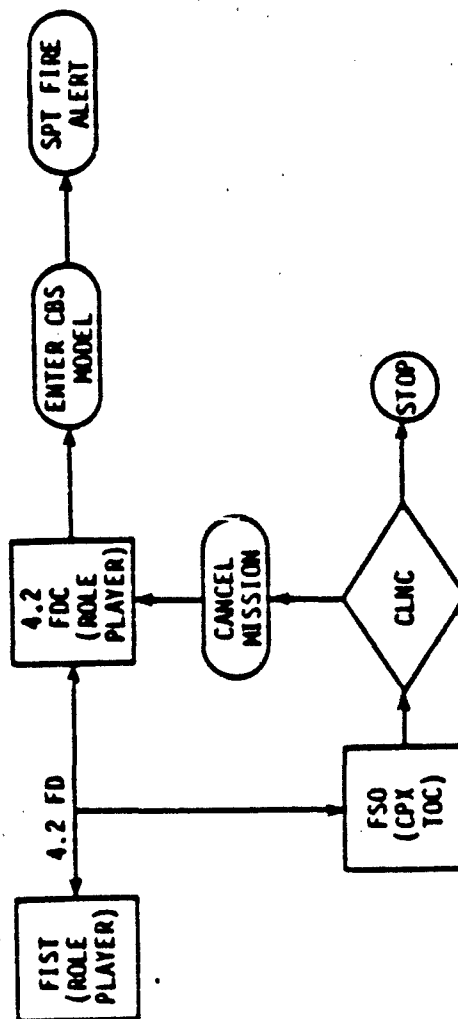


Figure 7. 4.2 inch mortar operations - BLUEFOR.

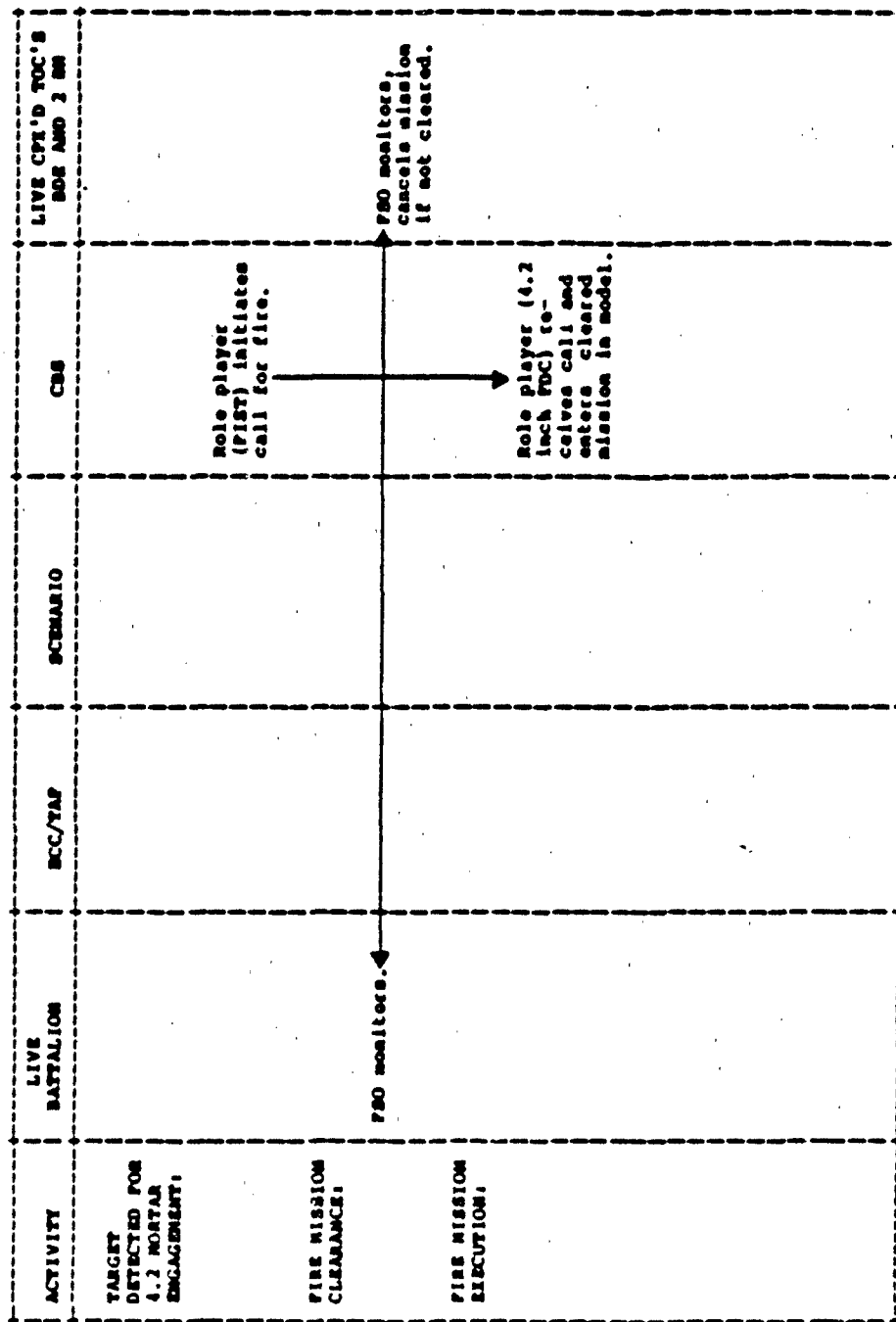


Figure 8. Operational concept for 4.2 inch mortar operations - BLUEFOR.

controller at the fire support station for entry into the model. The model shall generate alerts regarding support fire and AD fire. Figures 11 and 12 illustrate these operations.

1.3.1.5 BLUEFOR on OPFOR Preplanned Close Air Support Request - Although preplanned Close Air Support (CAS) requests normally originate at the battalion TOC, sometimes the request will come from a company/team over the Bn Cmd net. In the latter case, the battalion will evaluate, validate, and prioritize the request. The company/team will be notified of disapproval over the Bn Cmd net.

Consolidated battalion preplanned CAS requests will be forwarded to the brigade FSE over the Brigade Command net (Bde Cmd net). The brigade FSE will evaluate, validate, and prioritize the requests. The battalion FSE will be notified of brigade disapprovals over the Bde Cmd net. Consolidated preplanned CAS requests will be forwarded from the brigade FSE to the division's main FSE on the brigade control (Bde Ctl) net. Processing of these requests by the EMC/TAF will be the same as for ES play except that divisional approval will result in the entry of the preplanned CAS missions into the model for subsequent execution, diversion or cancellation. When the missions are flown, BLUEFOR on OPFOR support fire alerts and OPFOR on BLUEFOR air defense fire alerts shall be generated by the model. The CAS role player will relay strike and other pertinent information to the supported battalion on the Bde Cmd net.

Figures 13 and 14 illustrate the above operations.

1.3.1.6 BLUEFOR on OPFOR Immediate CAS Request - The company/team will initiate immediate CAS requests to the battalion FSE on the Bn Cmd net. Disapproval by any higher echelon will be relayed back to the company/team on the Bn Cmd net. The battalion FSE will forward approved requests through the battalion's U.S. Air Force (USAF) Air Liaison Officer (ALO) role player to the USAF Tactical Air Coordination Center (TACC) on the Air Force air request net (SSB). Transmission will be monitored by the brigade USAF ALO and the EMC/TAF brigade controller. Disapproval will be transmitted both to the battalion USAF ALO (on the SSB net) and to either the brigade FSE (on the Bde Cmd net) or the battalion FSE (on the Bde Cmd net), as appropriate.

Approved requests will be entered into the CBS model. The model shall generate BLUEFOR on OPFOR support fire alerts and OPFOR on BLUEFOR AD fire alerts.

Figures 15 and 16 illustrate the described relationships.

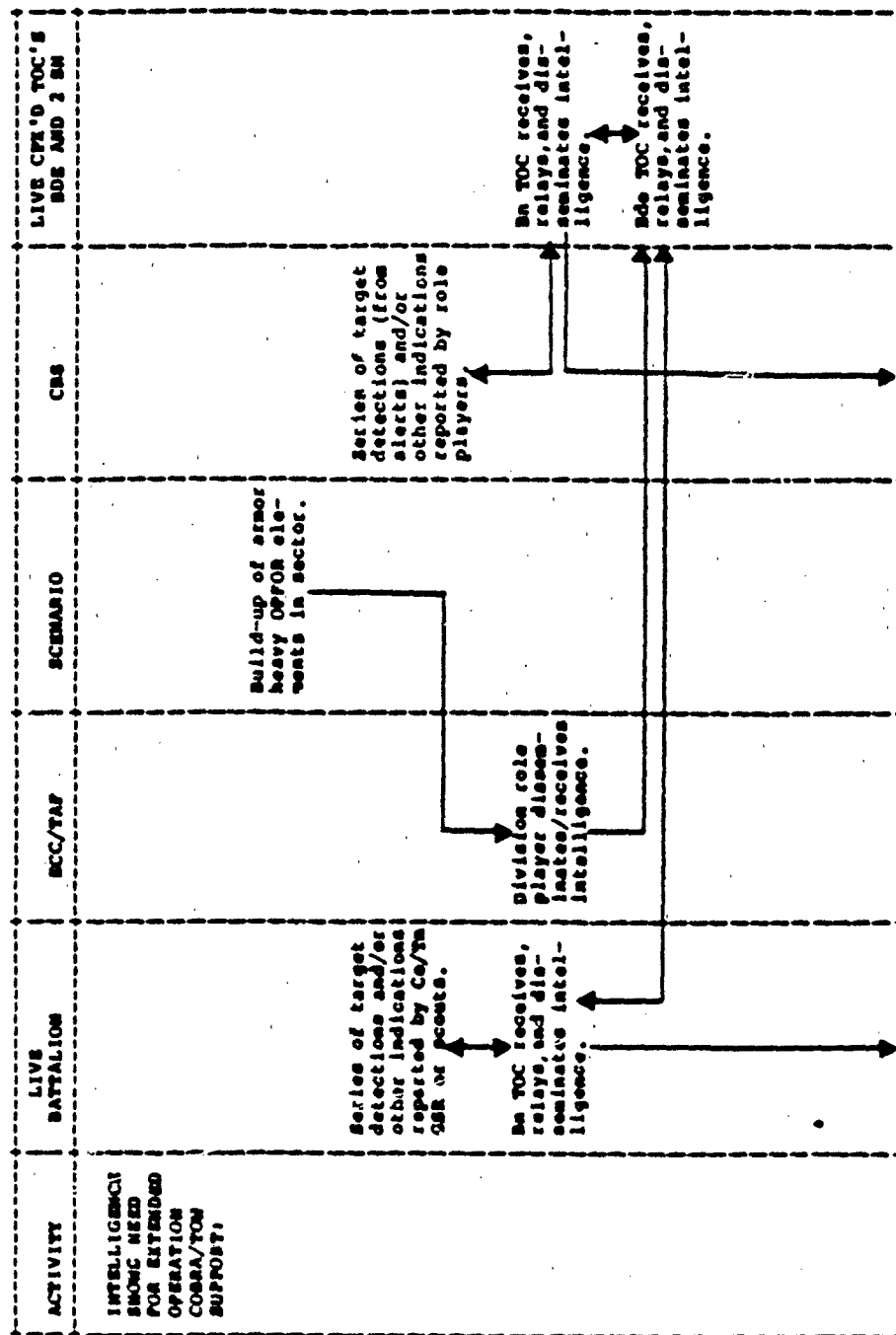


Figure 12. Operational concept for extended operation Cobra/TOW request - BLUEFOR on OPFOR.

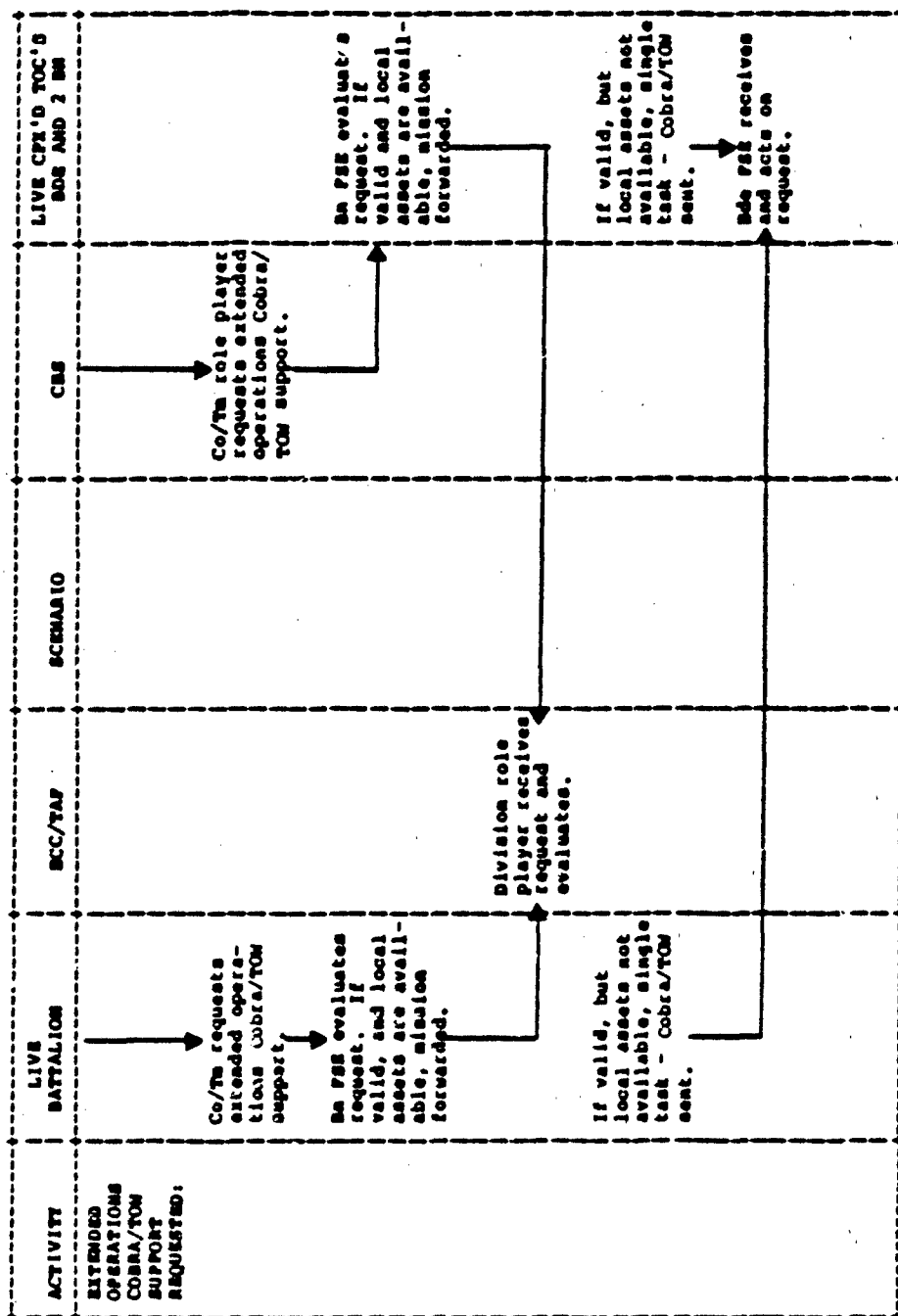


Figure 12. Operational concept for extended operation Cobra/TOW request - BLUEFOR on OPFOR (concluded).

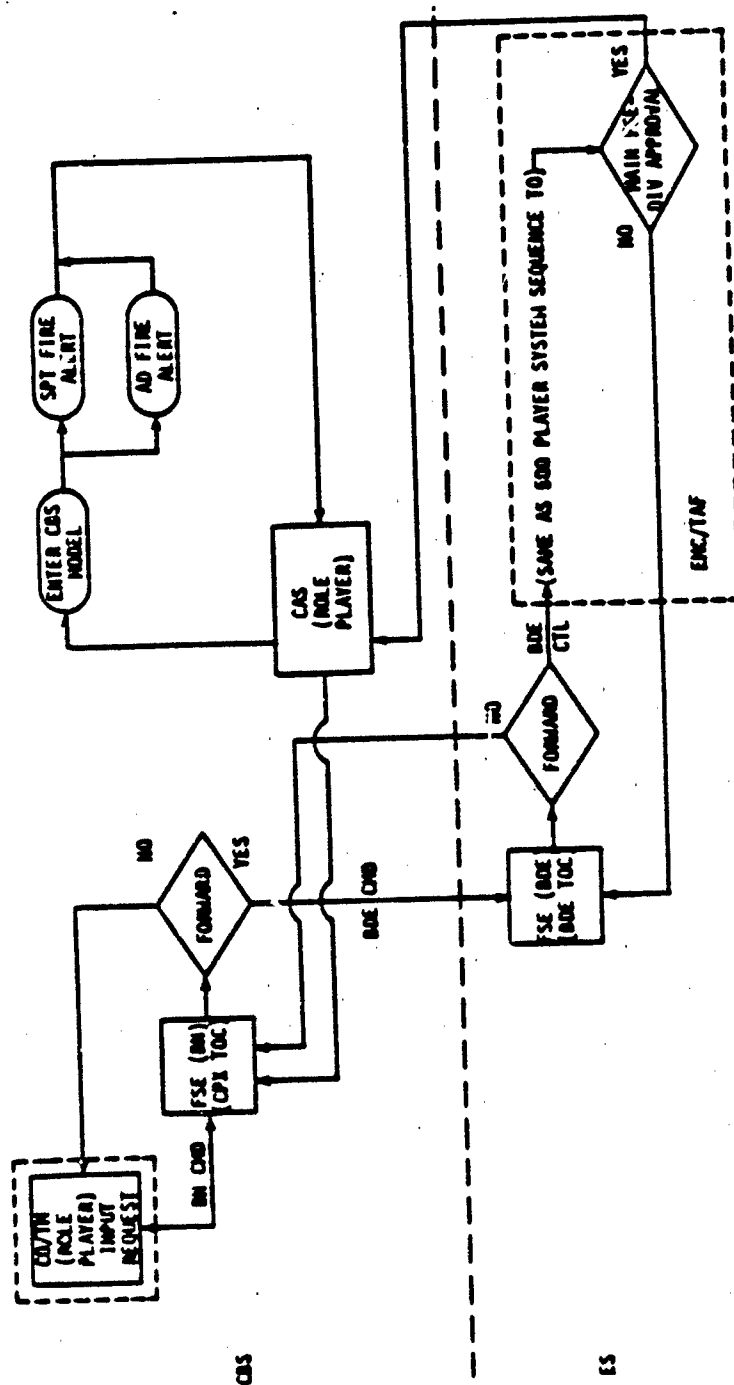


Figure 13. Preplanned close air support request - BLUEFOR on OPFOR.

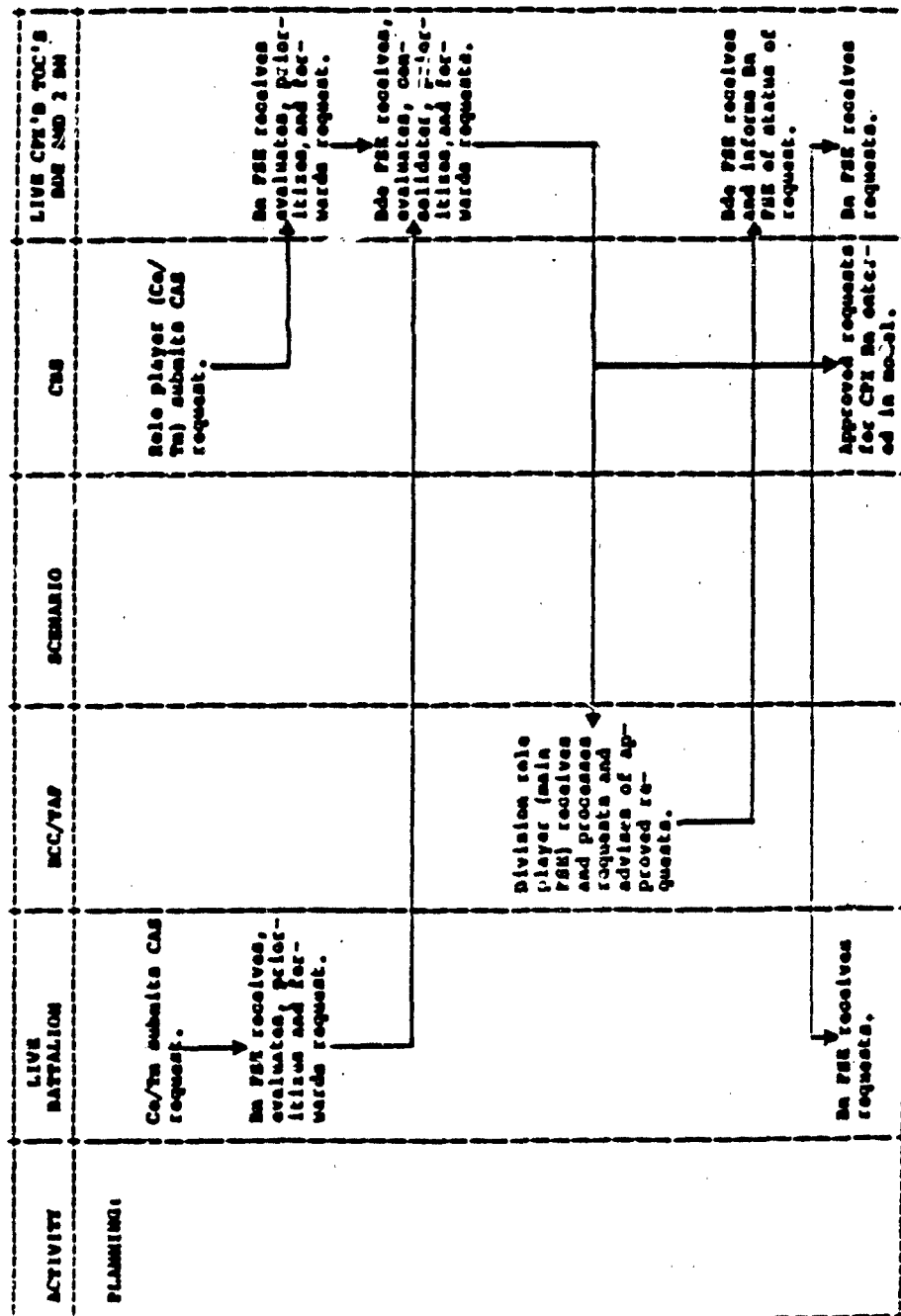


Figure 14. Operational concept for preplanned CAS request - BLUEFOR on OPFOR.

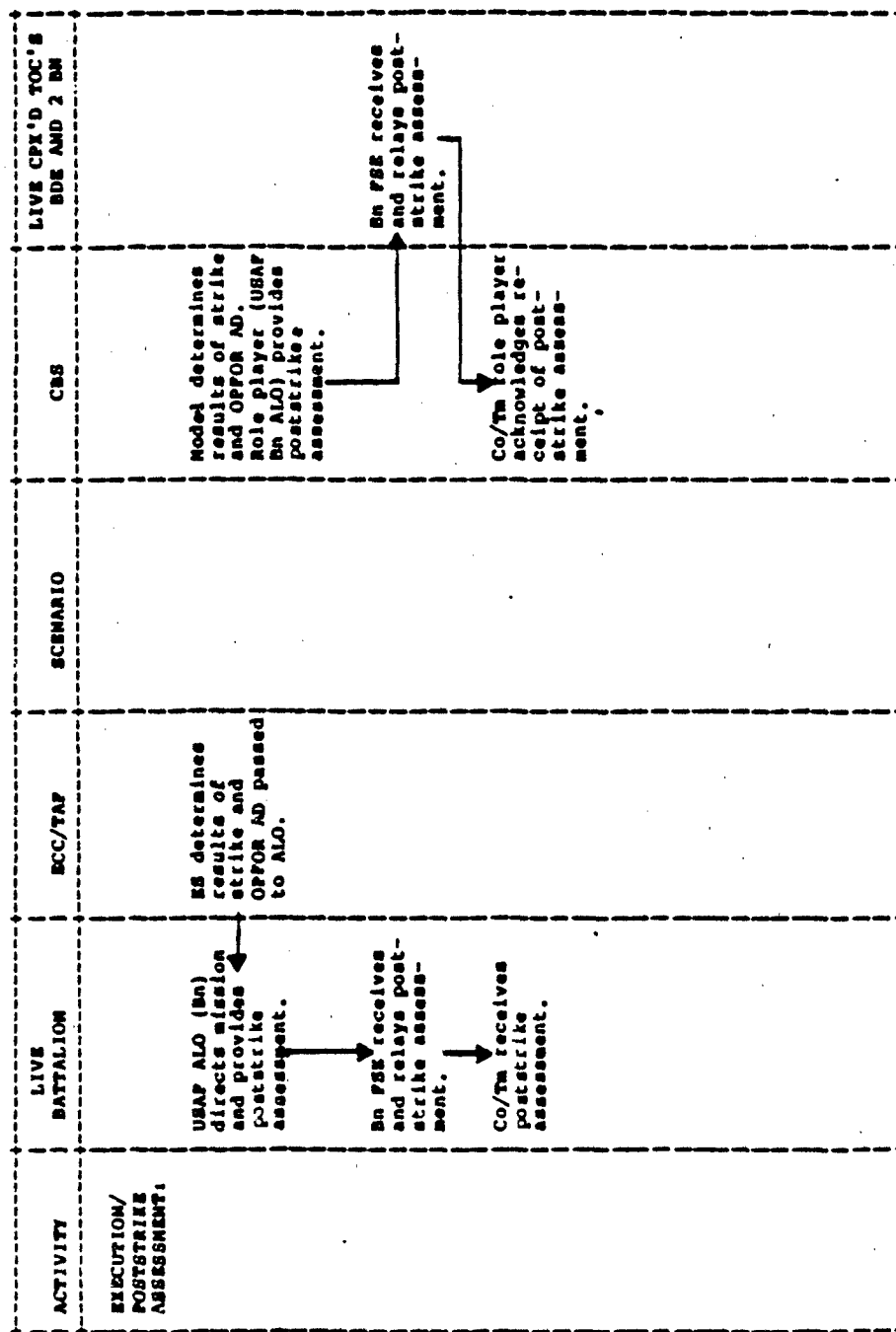


Figure 14. Operational concept for preplanned CAS request - BLUEFOR on OPFOR.
(concluded).

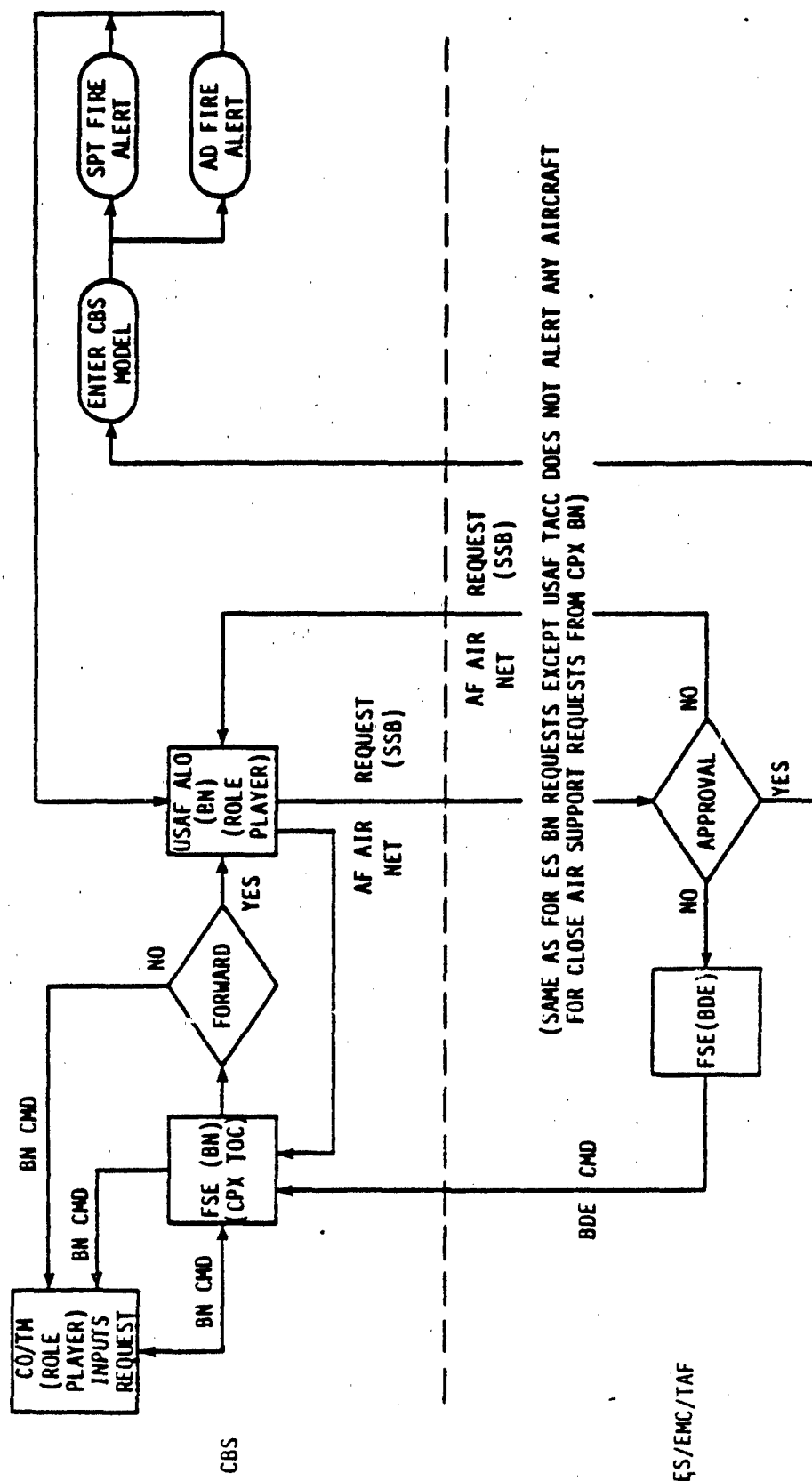


Figure 15. Immediate close air support request - BLUEFOR on OPFOR.

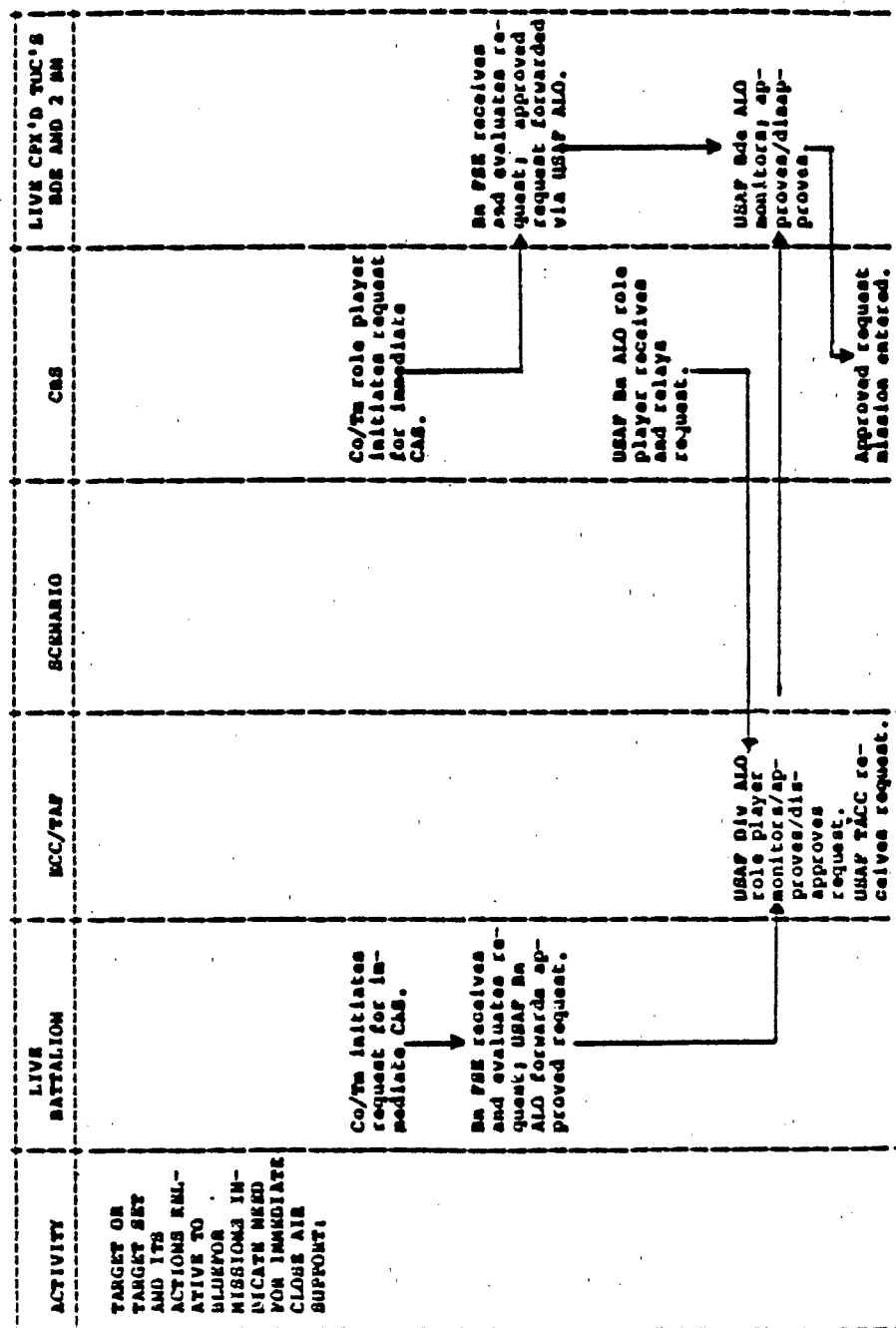


Figure 16. Operational concept for immediate close air support request - BLUEFOR on OPFOR.

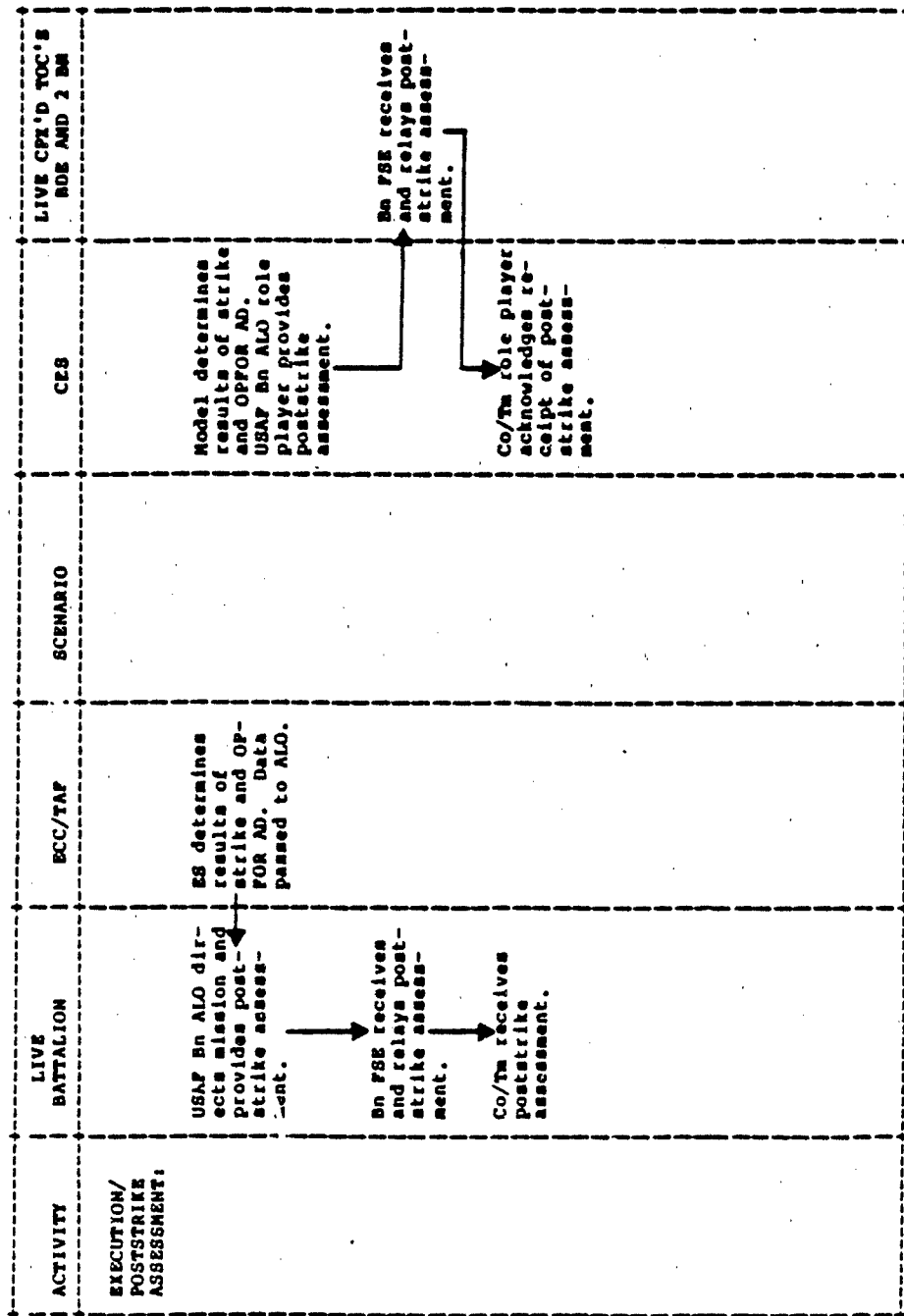


Figure 16. Operational concept for immediate close air support request - BLUEFOR on OPFOR (concluded).

1.3.1.7 BLUEFOR Field Artillery/Mortar Location - As illustrated in Figures 17 and 18, field artillery and mortar locations may be reported in one of two ways. First, the CPX battalion 4.2 FDC may report mortar locations to the Combat Support Company (CSC) on the Bn Cmd net. This communication will be monitored by the FSO at the CPX battalion TOC. The FSO may also receive mortar locations directly by using the 4.2 FD net. The CPX battalion TOC's FSO will disseminate 4.2 mortar locations on the battalion command/fire net, which will be monitored by the field artillery battalion's FDC. The field artillery battery's FDC will report battery locations to the CPX battalion TOC's FSO on the Bn C/F net, which is also monitored by the field artillery battalion's FDC.

The field artillery battery's FDC that is supporting the ES maneuver battalion will report battery locations to the battalion TOC's FSO and the field artillery battalion's FDC will monitor this information. The interchange of location data between the field artillery battalion's FDC and the FSOs at the CPX battalions and ES battalions (on the Bn C/F net) will enable current locations of support fire units to be maintained in both the model and EMC/TAF.

1.3.1.8 BLUEFOR Vulcan Location - Operations for Vulcan locations will be straightforward. In the model, the Vulcan platoon role player will report the location of Vulcan units to the CPX battalion TOC on the Bn Cmd net. For the live battalion, the Vulcan platoon leader will report the location to the live battalion TOC. This is shown in Figures 19 and 20.

1.3.1.9 BLUEFOR Manpad Location - Manpad location operations will be similar to those for Vulcan locations. Manpad locations will be reported on the Bn Cmd net either by the company/team role player to the CPX battalion TOC or directly from the Vulcan platoon role player to the CPX battalion TOC, depending on the control and reporting channels established by the battalion. When the company/team reports to the CPX battalion TOC, the Vulcan platoon role player will monitor the report. This is shown in Figures 21 and 22.

1.3.2 Combat Support/Combat Service Support Operations

1.3.2.1 BLUEFOR Equipment Status - The company trains and CSC role players will report equipment status to the CPX battalions' field trains (S4) on the battalion admin/log (Bn A/L) net. Consolidated reports will be sent from the CPX battalion S4 to the brigade S4 on the brigade admin/log (Bde A/L) net.

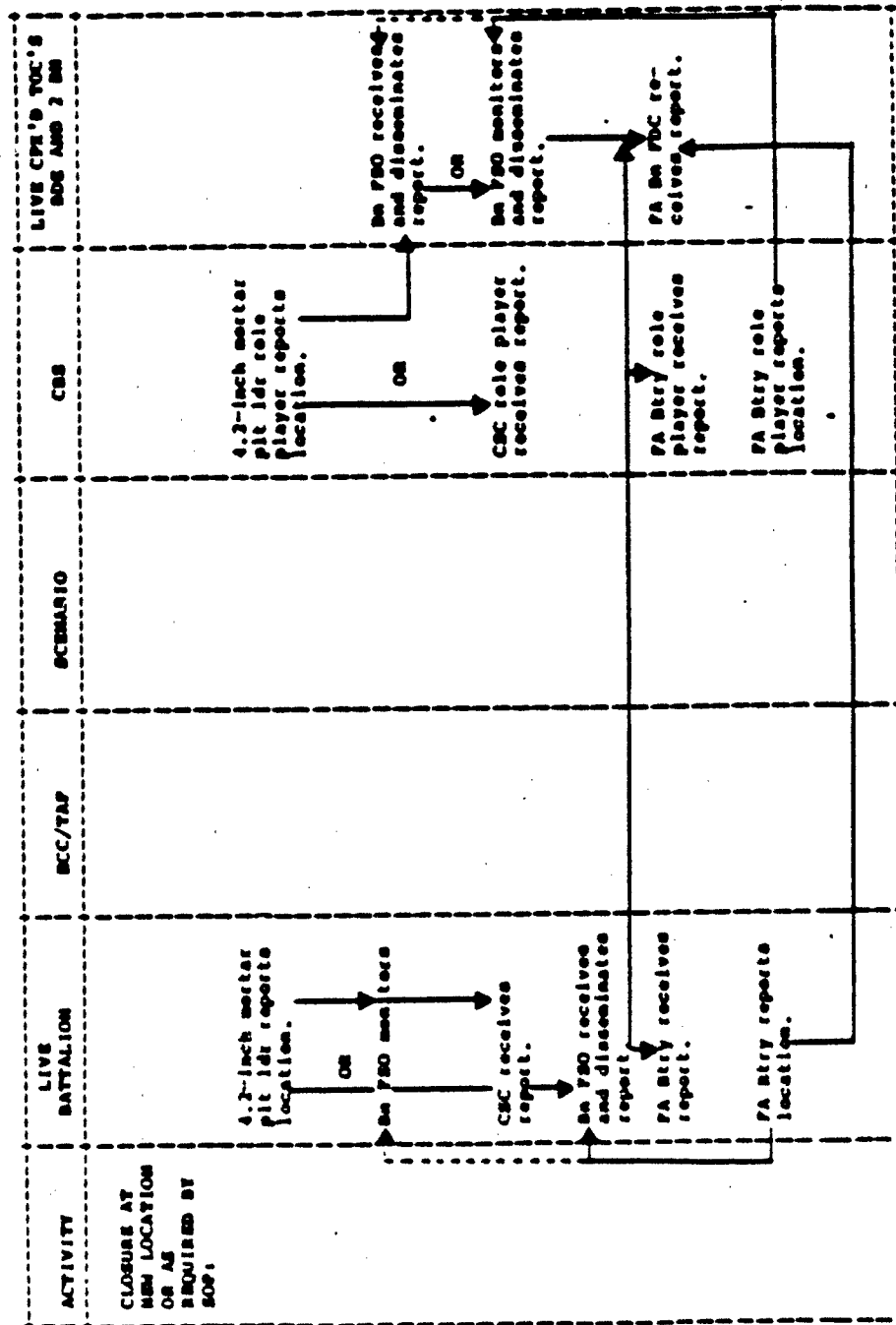


Figure 18. Operational concept for field artillery/mortar location - BLUEFOR.

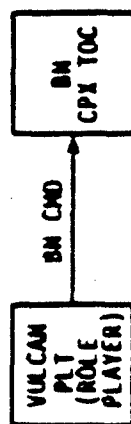


Figure 19. Vulcan locations - BLUEFOR.

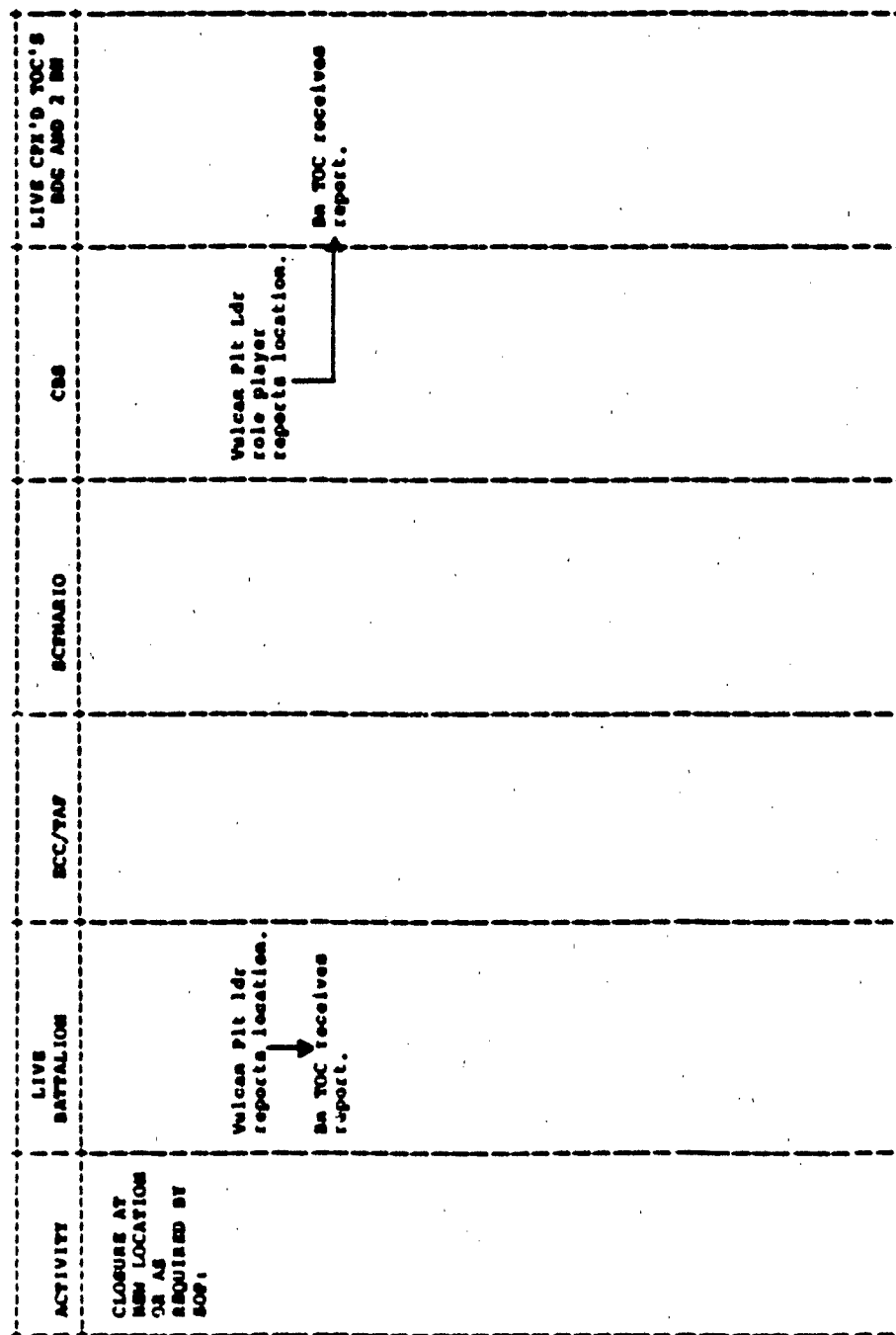


Figure 20. Operational concept for Vulcan location - BLUEFOR.

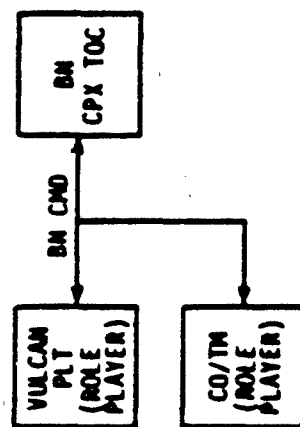


Figure 21. Manpad location - BLUEFOR.

/ACTIVITY	LIVE BATTALION	MCC/TAP	SCENARIO	CDS	LIVE CDR'S TDC'S BDE AND 3 BN
CLOSURE AT MAN LOCATION OR AS REQUIRED BY MAP.	<p>Co/Tn reports location of Manpad team.</p> <p>→</p> <p>Bn TDC receives report; Vulcan pit monitors re- port.</p> <p>CA</p> <p>Vulcan pit re- ceives report; Bn TDC monitors report.</p>			<p>Co/Tn role player reports location of Manpad team.</p> <p>→</p> <p>Vulcan pit role player monitors/ receives report.</p> <p>→</p> <p>Bn TDC receives/ monitors report.</p>	

Figure 22. Operational concept for Manpad location - BLUEFOR.

These interactions are shown in Figures 23 and 24.

1.3.2.2 BLUEFOR Personnel Status - Either the company executive officer, or the 1st sergeant and CSC role players will report personnel status to the CPX battalions' field trains (S1) on the Bn A/L net. Consolidated reports will be sent from the CPX battalions' S1 to the brigade S1 on the Bde A/L net.

The above is illustrated in Figures 25 or 26.

1.3.2.3 Supply Status - The company trains and CSC role players will report equipment status to the CPX battalion field trains officer (S4) on the Bn A/L net. Consolidated reports will be sent from the CPX battalion S4 to the brigade S4 on the Bde A/L net.

These interactions are shown in Figures 27 and 28.

1.3.2.4 BLUEFOR Engineer Location - The location of engineer units will be reported by the engineer platoon role player to the CPX battalion TOC on the Bn Cmd net (see Figures 29 and 30).

1.3.2.5 BLUEFOR Minefield/Barrier Location - The installed locations of minefields and barriers will be reported to the CPX battalion TOC on the Bn Cmd net from either the company/team or engineer platoon role players (depending on the control channels directed by the battalion).

Minefield/barrier locations operations are illustrated in Figures 31 and 32.

1.3.2.6 BLUEFOR Trains Location (Co/Bn Move Complete) - company trains and combat trains role players will report locations to the CPX battalion field trains officer (S4) on the Bn A/L net. Appropriate train location data will be transmitted from the CPX battalion S4 to the brigade S4 on the Bde A/L net. This is shown in Figures 33 and 34.

1.3.3 Intelligence Operations

1.3.3.1 BLUEFOR Company/Platoon Periodic and Event Reporting - Required periodic and event reports will be sent by unit role players to the CPX battalion TOC on the Bn Cmd net. Consolidated reports will be sent by the CPX battalion to the brigade S3 on the Bde Cmd net. These operations are illustrated in Figures 35 and 36.

1.3.3.2 BLUEFOR Spot Reporting - Spot reports from simulated units (i.e., company/teams, scout platoons, Vulcan platoons and Ground Surveillance Radar (GSR) units) will be sent to the CPX battalion S2 on the Bn Cmd or battalion

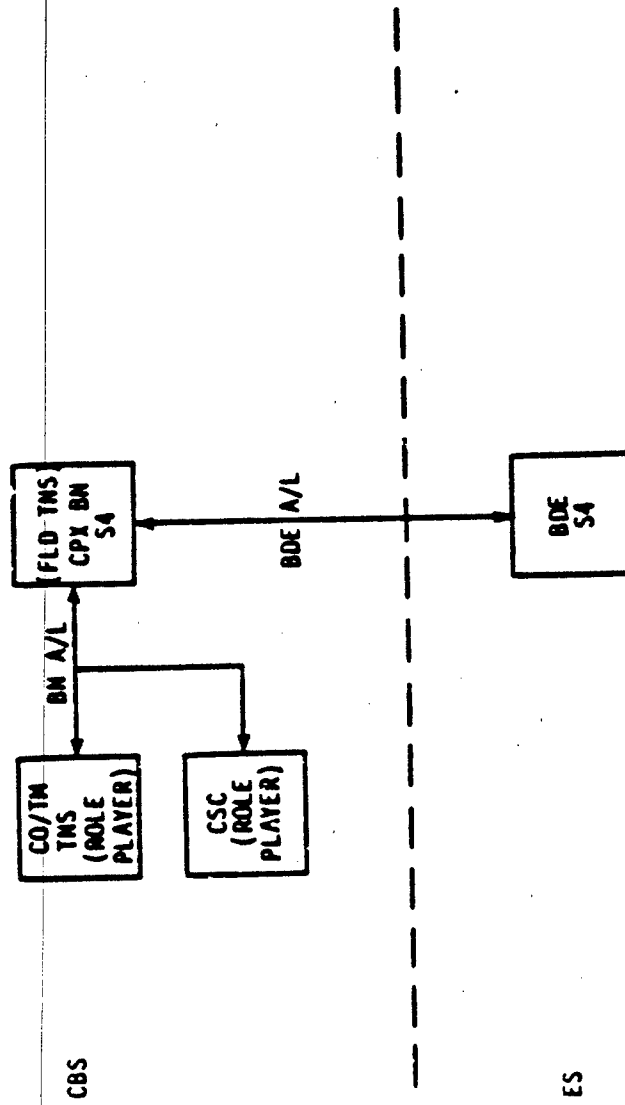


Figure 23. Equipment status - BLUEFOR.

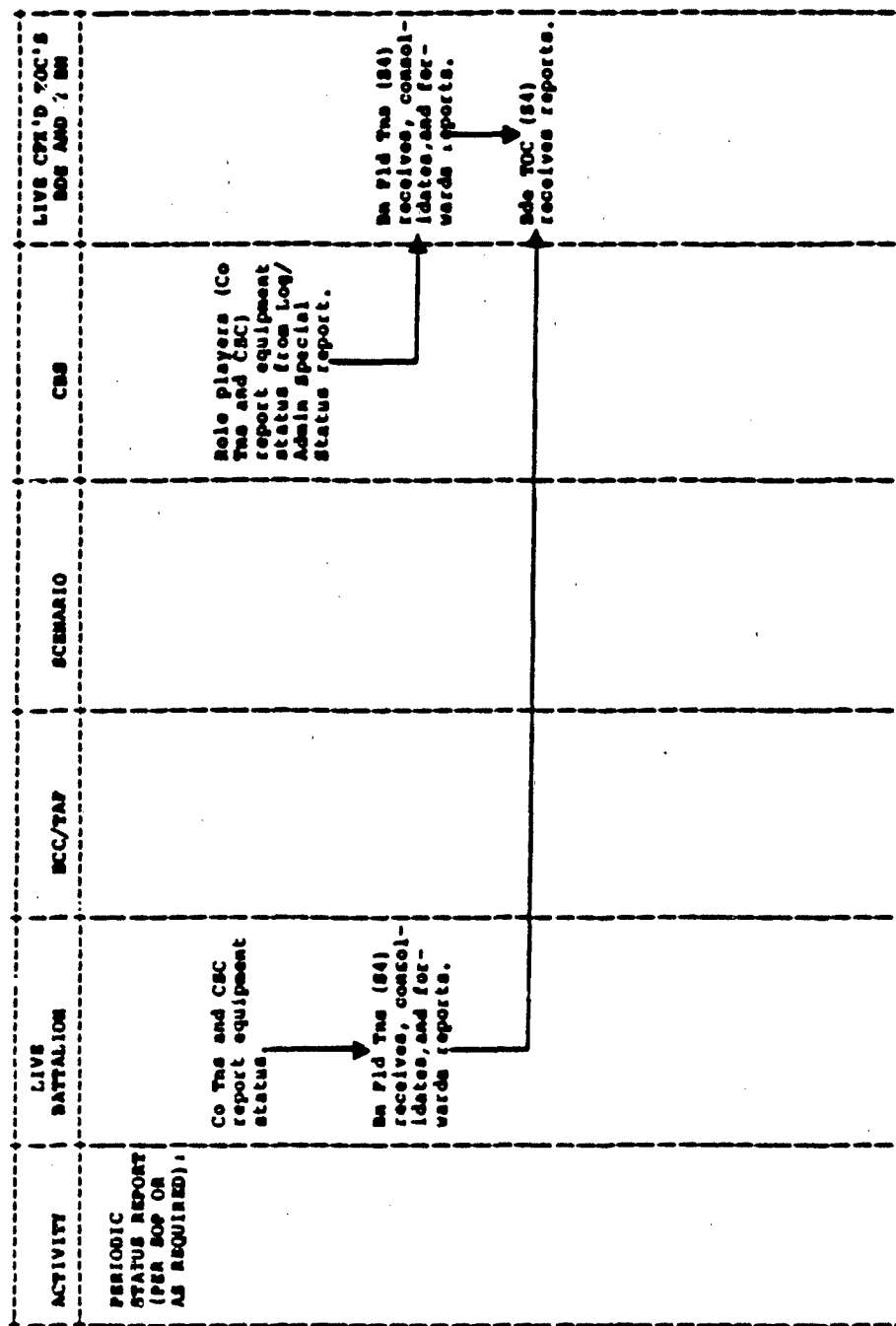


Figure 24. Operational concept for equipment status - BLUEFOR.

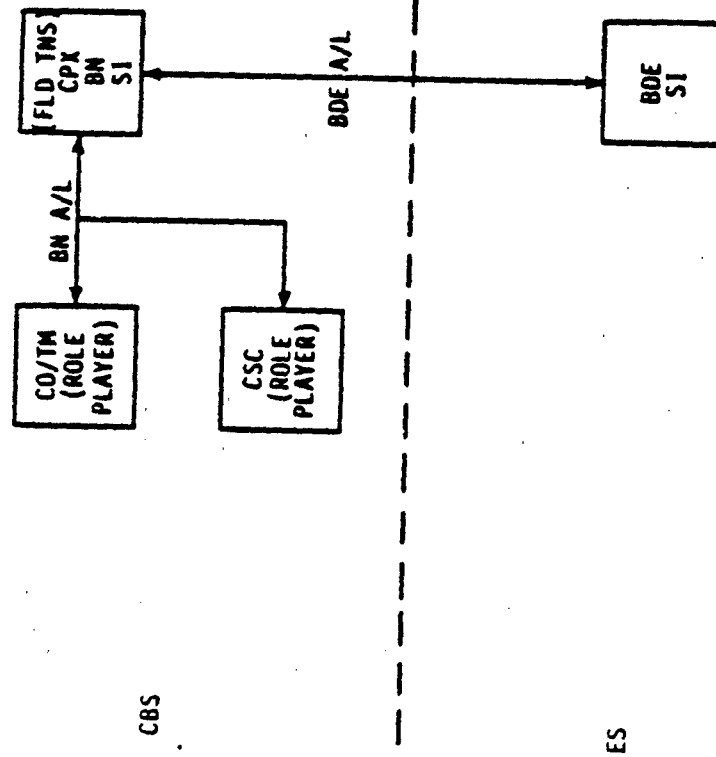


Figure 25. Personnel status - BLUEFOR.

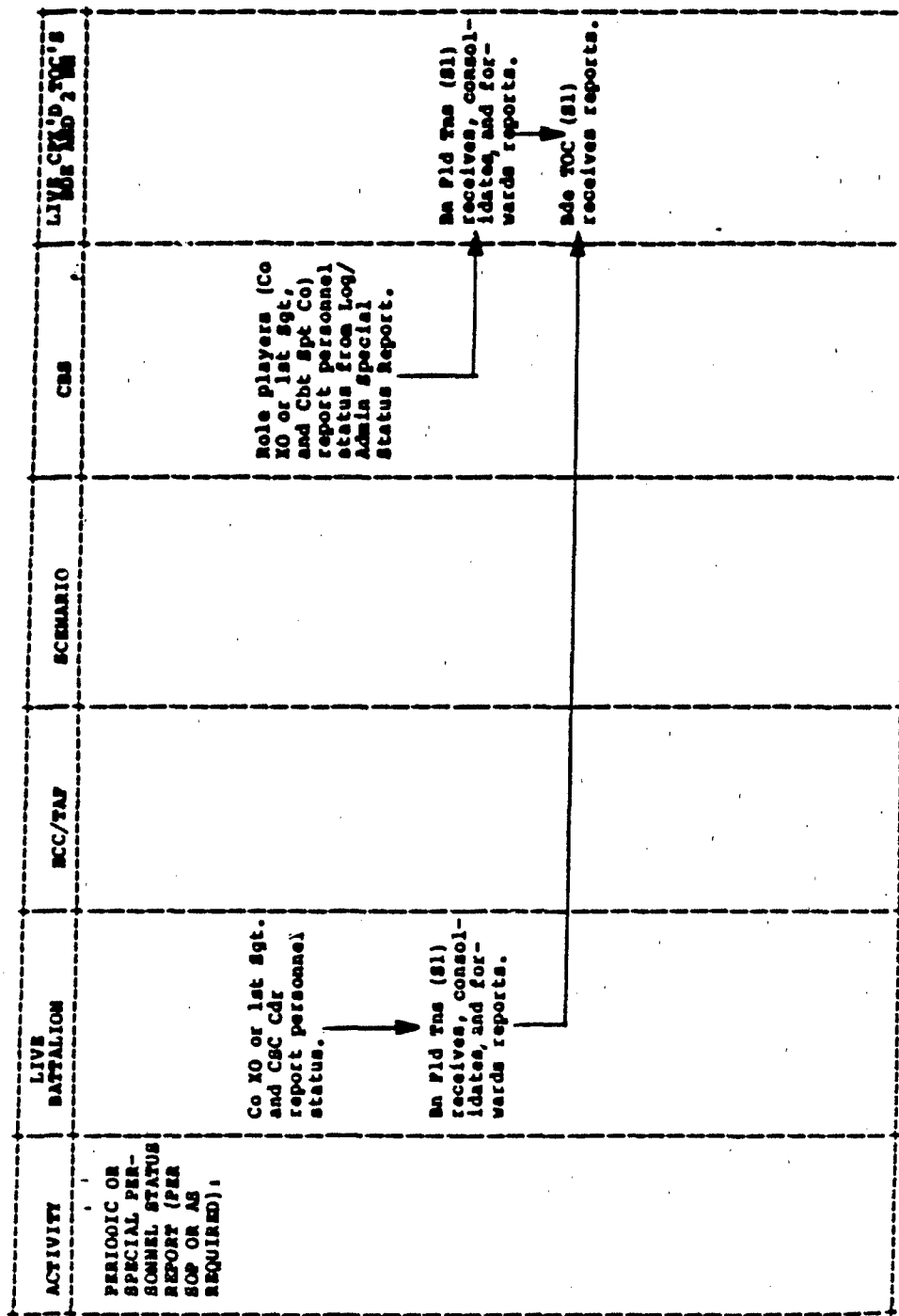


Figure 26. Operational concept for personnel status - BLUEFOR.

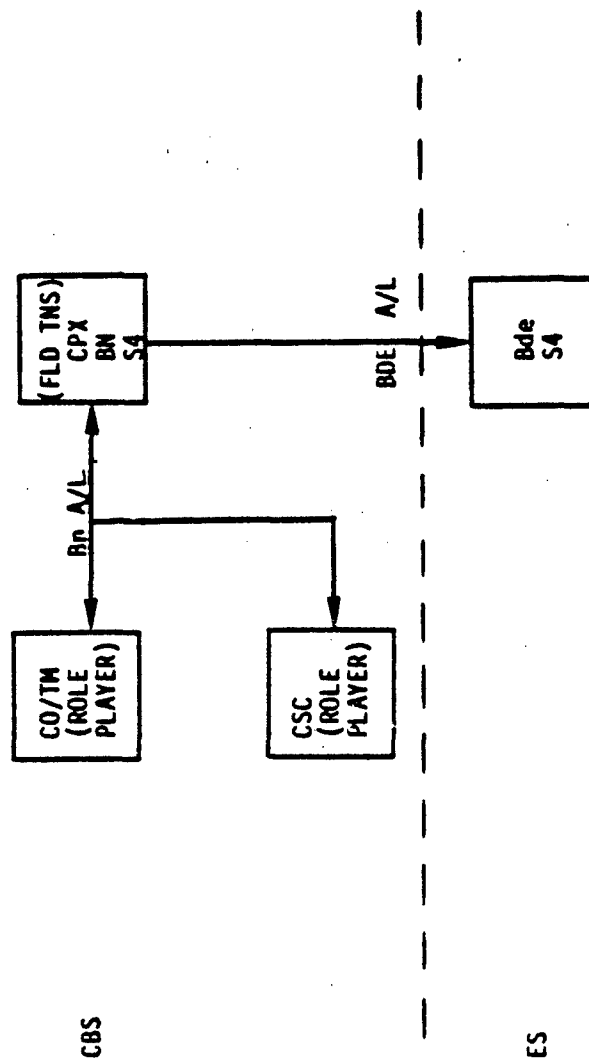


Figure 27. Supply status - BLUEFOR.

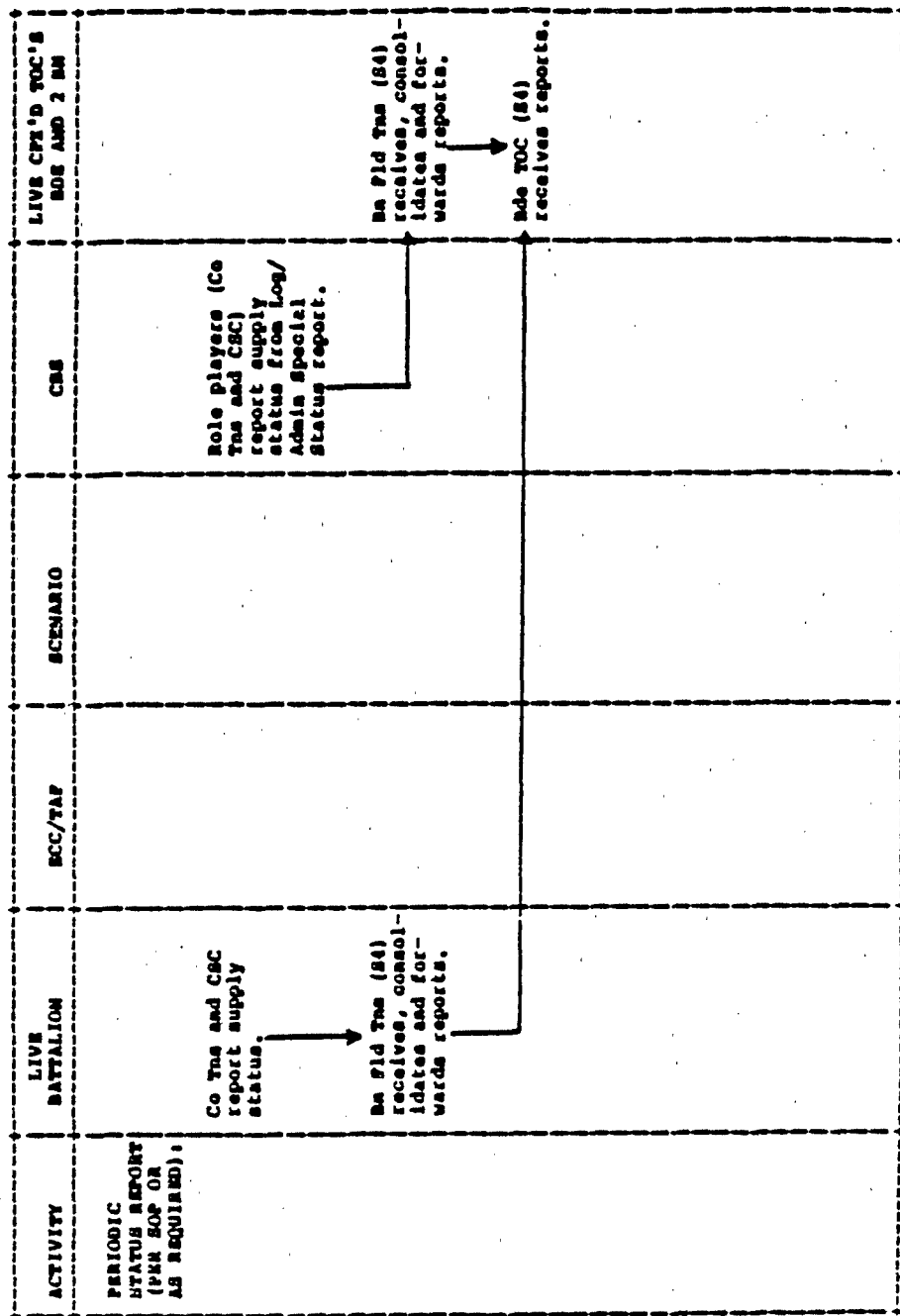


Figure 28. Operational concept for supply status - BLUEFOR.

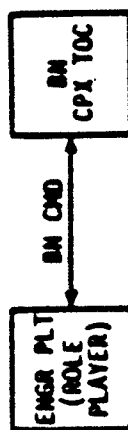


Figure 29. Engineer location - BLUEFOR.

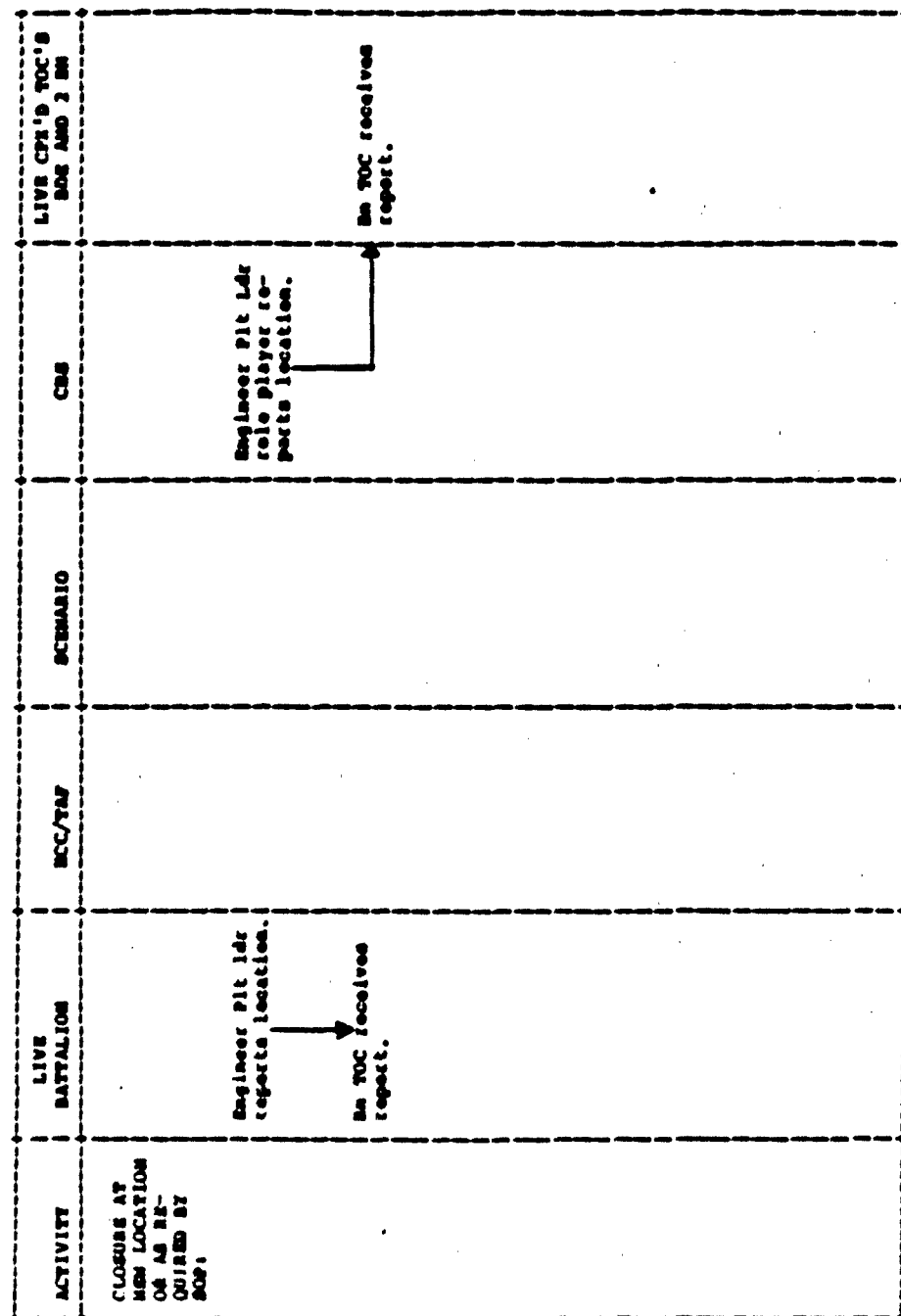


Figure 30. Operational concept for engineer location - BLUEFOR.

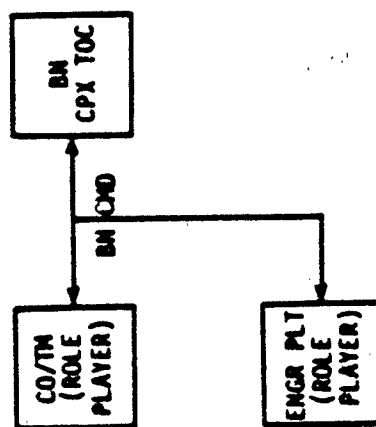


Figure 31. Minefield/barrier location - BLUEFOR.

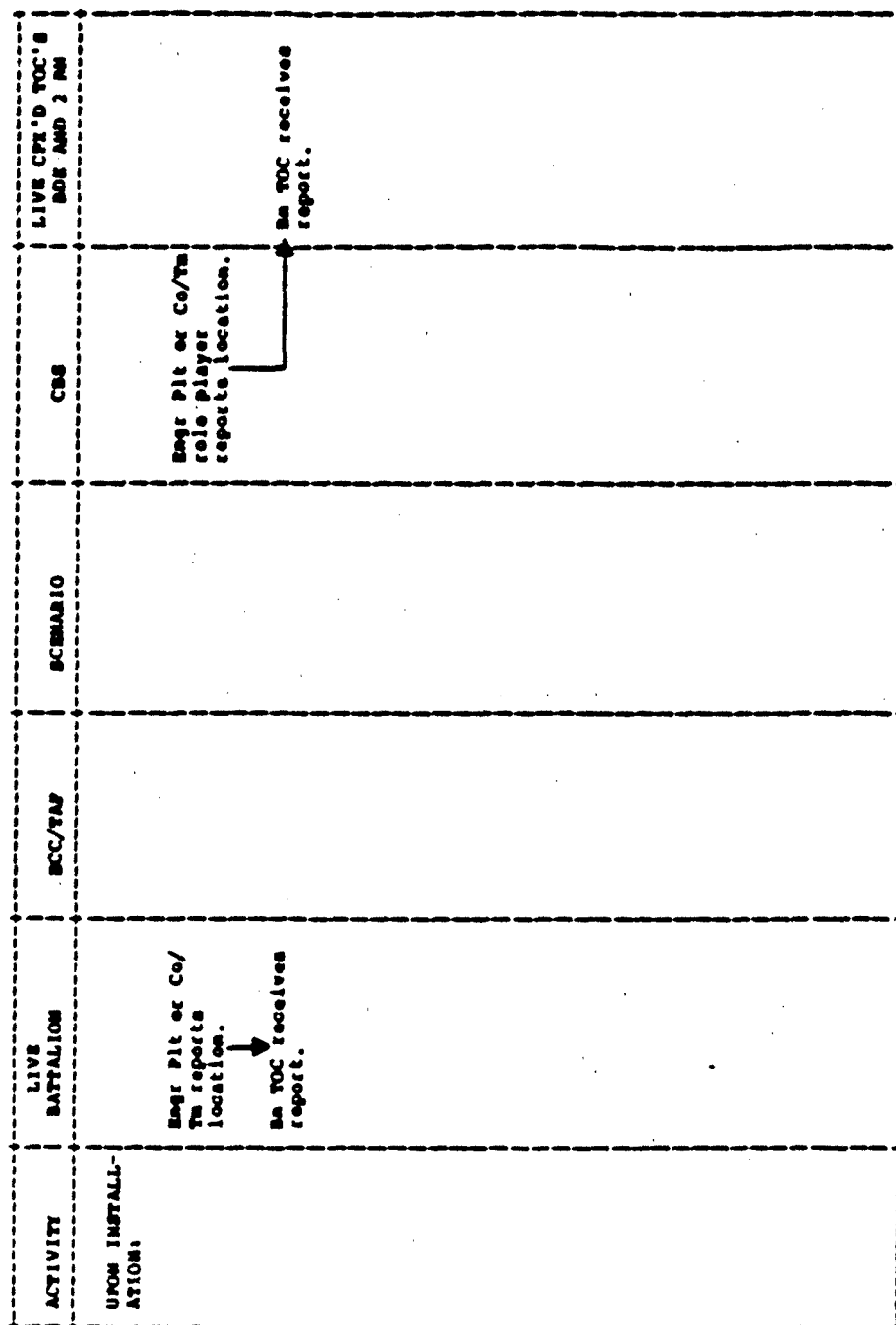


Figure 32. Operational concept for minefield/barrier location - BLUEFOR.

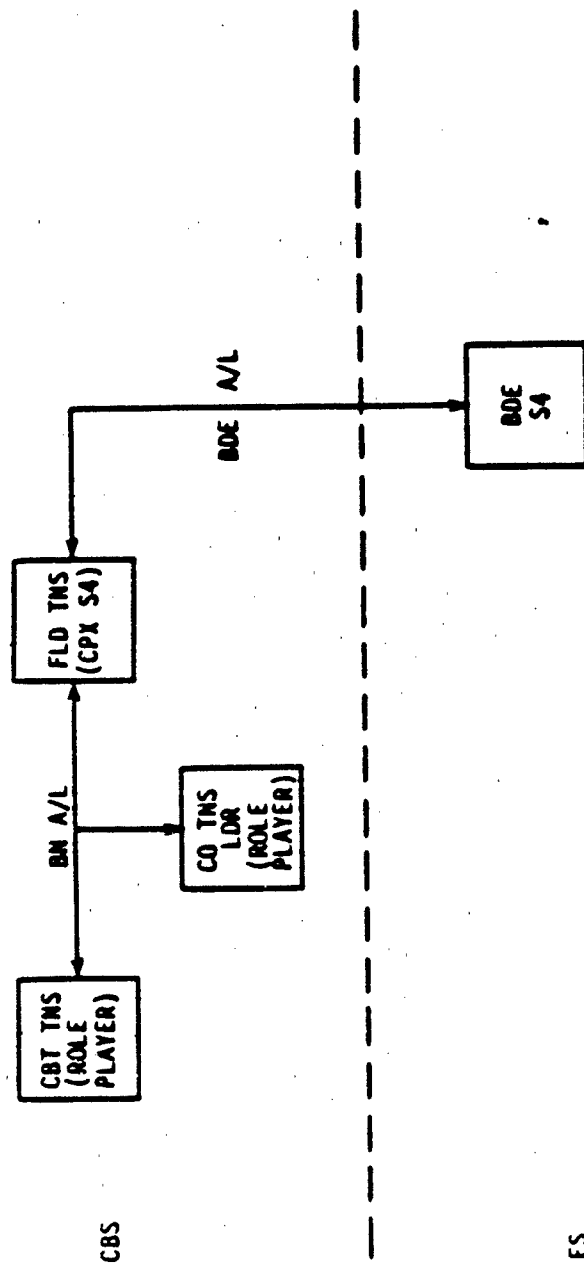


Figure 33. Trains location (CO/BN move complete) - BLUEFOR.

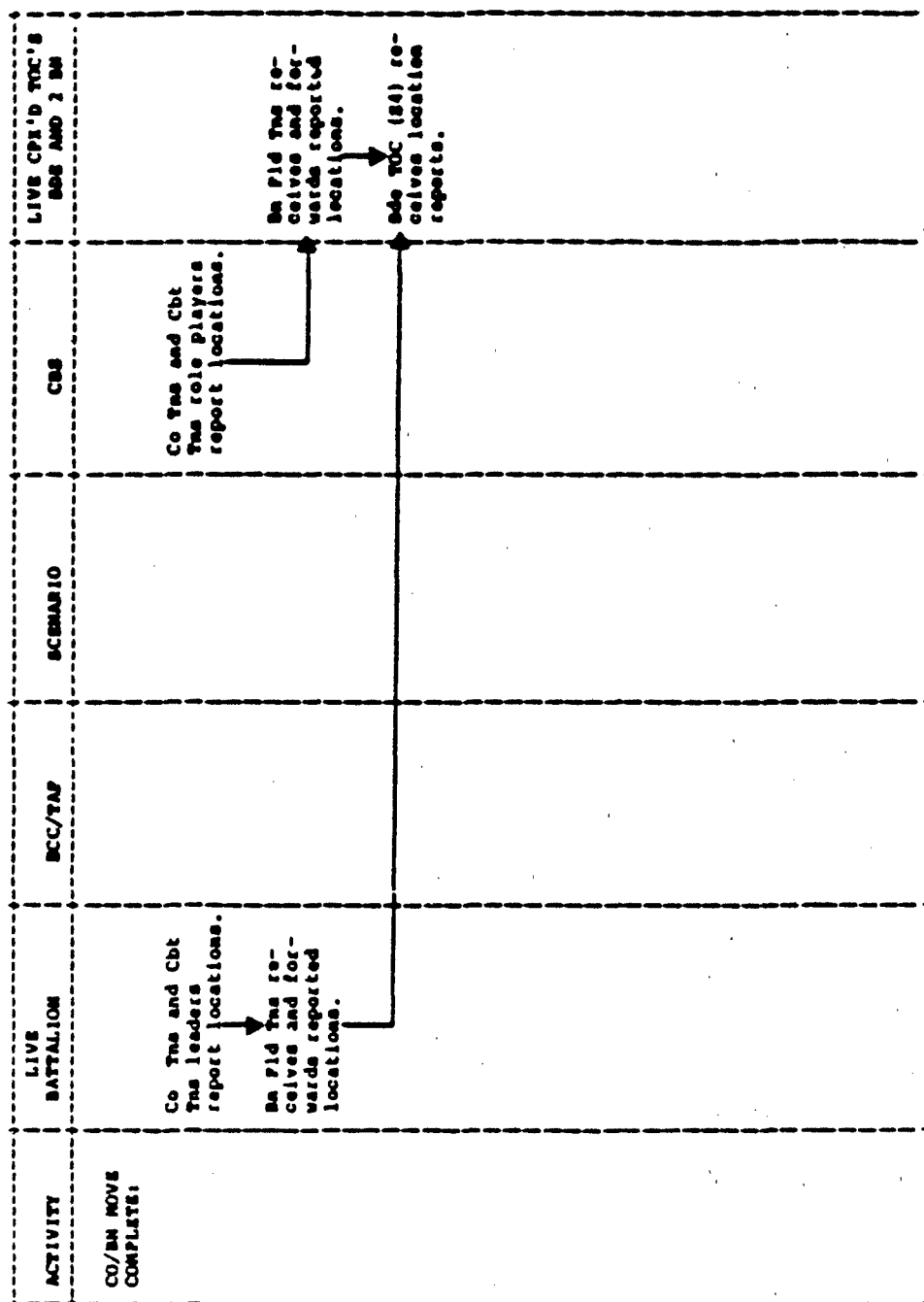


Figure 34. Operational concept for trains location CO/BN move complete - BLUEFOR.

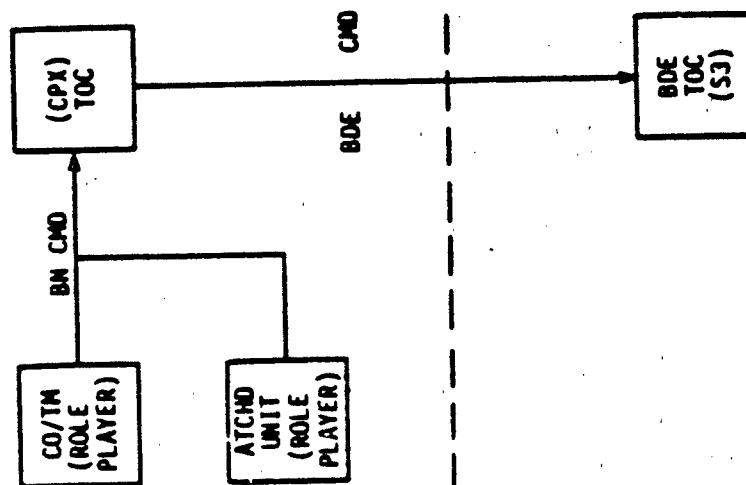


Figure 35. Company/platoon report - periodic and event - BLUEFOR.

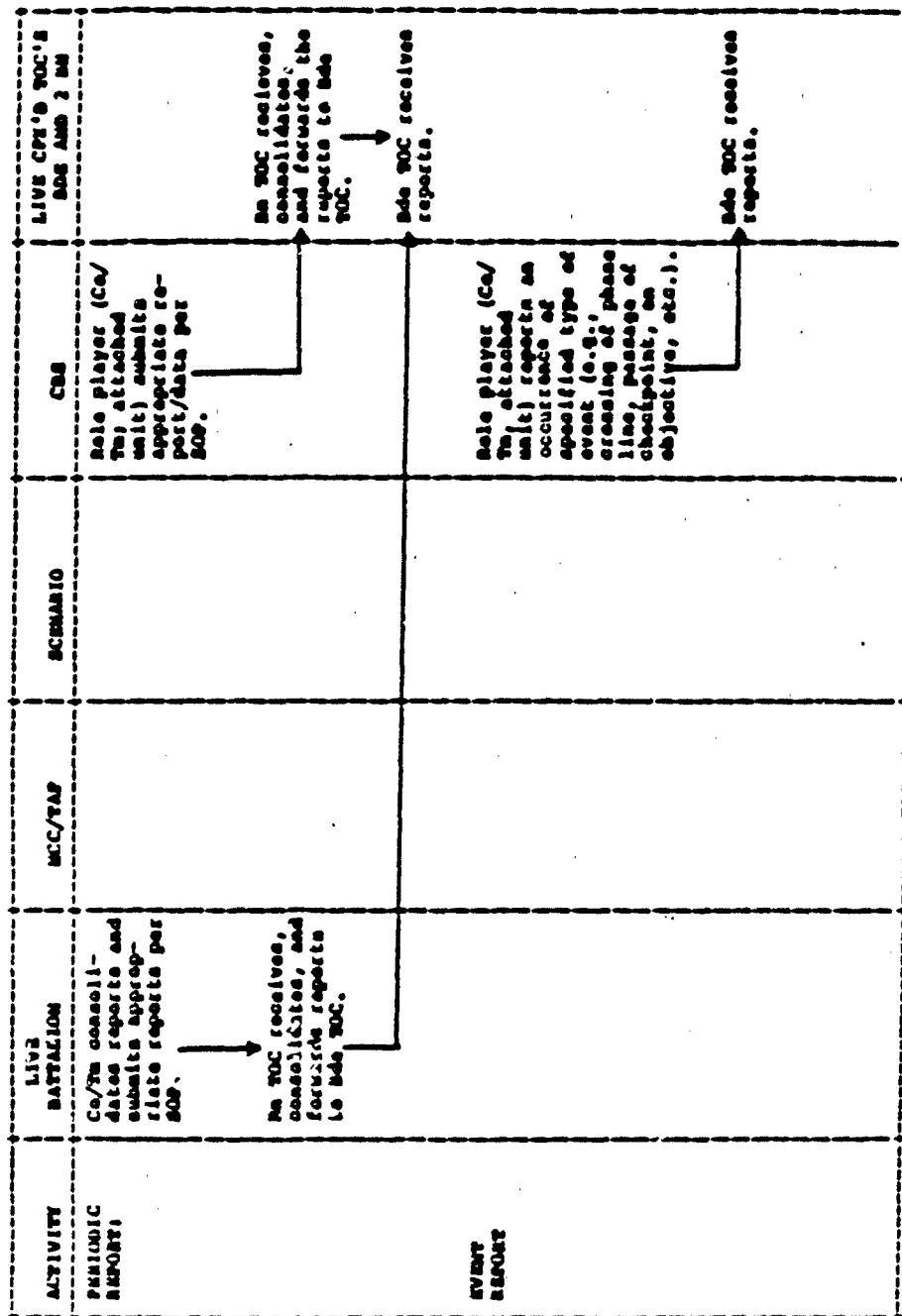


Figure 36. Operational concept for periodic and event reporting - BLUEFOR.

intelligence (Bn Intel) nets. Appropriate spot reports will be relayed from the CPX battalion S2 to the brigade S2 on the brigade intelligence (Bde Intel) net, as illustrated in Figures 37 and 38.

1.3.3.3 BLUEFOR Shell Reporting/Mortar Reporting and Bomb Reporting - As shown in Figures 39 and 40. Reports of incoming shell, mortar, and bomb support fires will be sent from unit role players to the PSO at the CPX battalion TOC on the Bn Cmd or 4.2-FD nets. As appropriate, these reports will be relayed to the FSE at the brigade TOC on the Bn C/F net.

1.3.3.4 BLUEFOR GSR Location - The location of a GSR will be reported to the CPX battalion TOC on the Bn Intel net. The CPX battalion TOC and the brigade TOC will coordinate GSR locations on the Bde Intel net (see Figures 41 and 42).

1.3.4 Nuclear, Biological and Chemical Operations

1.3.4.1 Nuclear Play - The occurrence of a nuclear event places a unique coordination requirement on the ECC/TAF, EMC/TAF and CBS facilities. This is due to the wide-ranging effects of the nuclear event, which can cross battalion boundaries and persist for a long time. The more limited effects of conventional weapons allow less concern for coordination by the EMC/TAF and simulation personnel, in that the EMC/TAF need be concerned only about the live battalion situation and the role players concerned only about the simulated battalions.

The need for coordination by the various facilities can best be explained through analysis of the sequential events which occur operationally following a nuclear event. Figure 43 shows the result of such an analysis for a nuclear event initiated by the OPFOR. The activities have been divided into phases of preparation, immediate effects, short-term effects and long-term effects. Each phase has been further broken down into distinct activities. Examination of the flow of interactions shows that the key items needed to ensure coordinated play of an OPFOR nuclear event are a skillfully conceived scenario describing the nuclear event, coordinated activation of the nuclear model and trained role players and controllers to respond in a timely and accurate fashion to the outputs of the nuclear model. In particular, the division role player must realistically provide information (Nuclear, Biological and Chemical (NBC) reports) and orders (survey teams, decontamination) as appropriate to the training objectives.

Figure 44 shows the slight difference in activities that could potentially occur from a BLUEFOR nuclear event. In fact, troop safety requirements will usually mean that

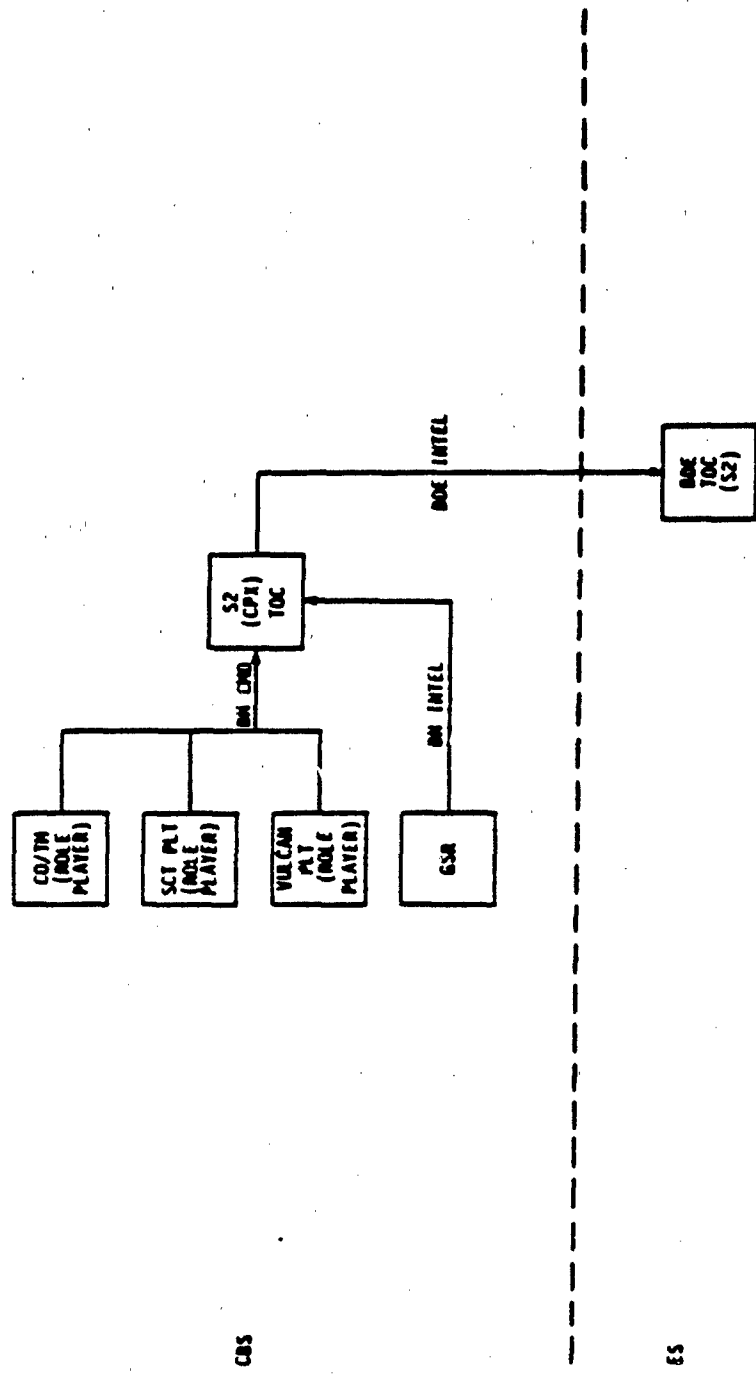


Figure 37. Spotrep - BLUEFOR.

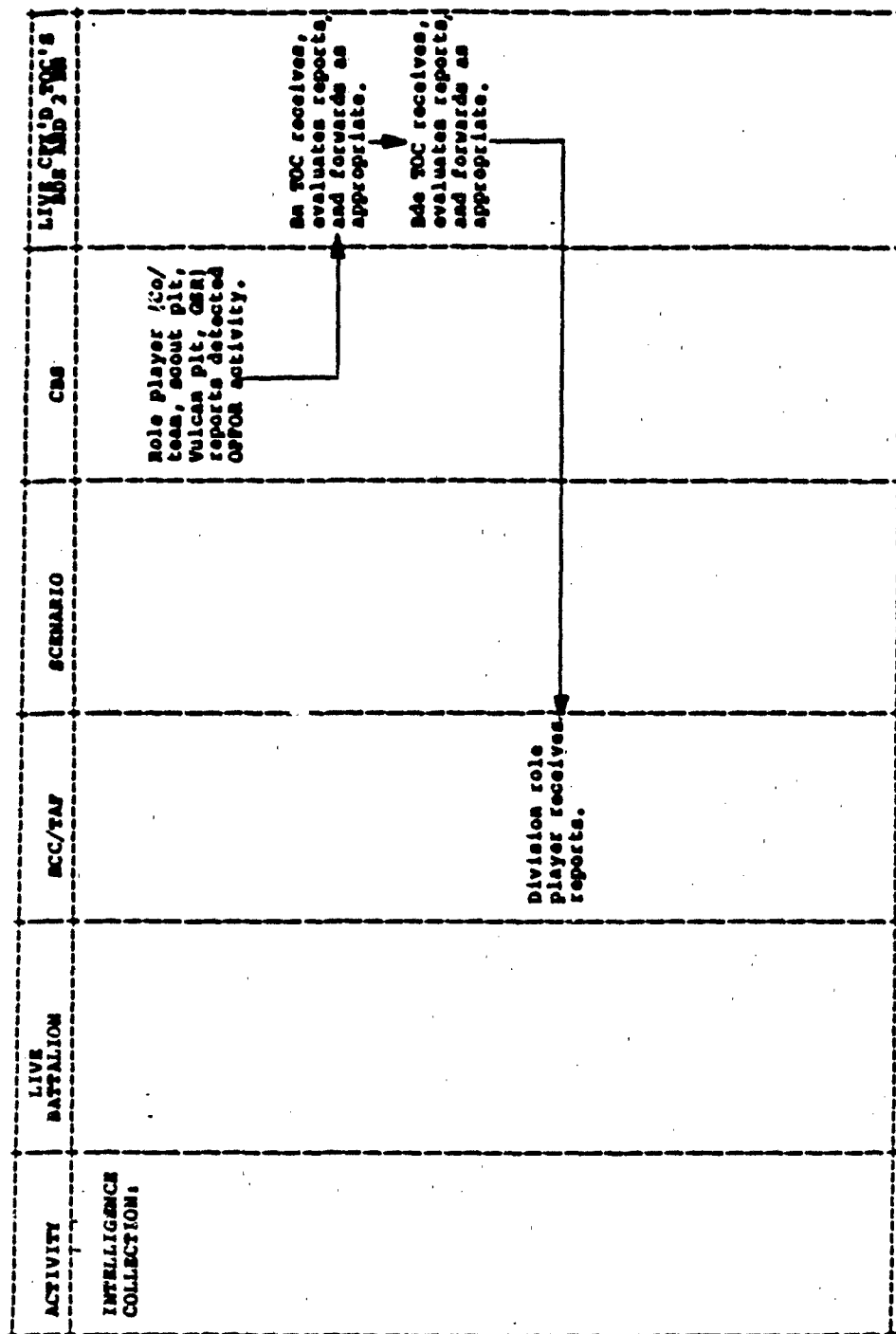


Figure 38. Operational concept for spotrep - BLUEFOR.

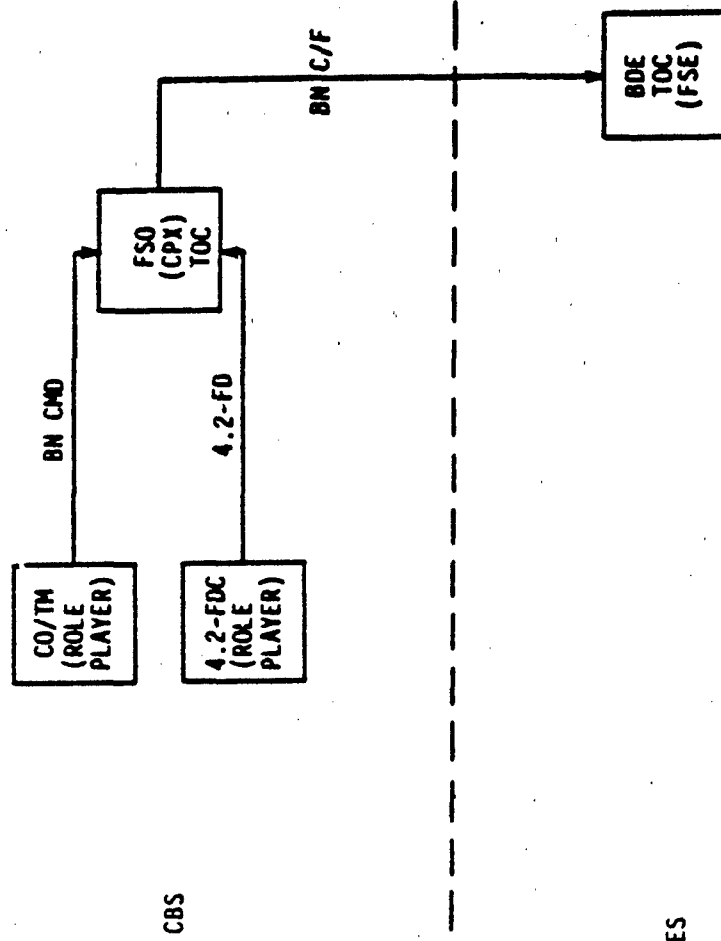


Figure 39. Shelrep/mortrep/bombrep - BLUEFOR.

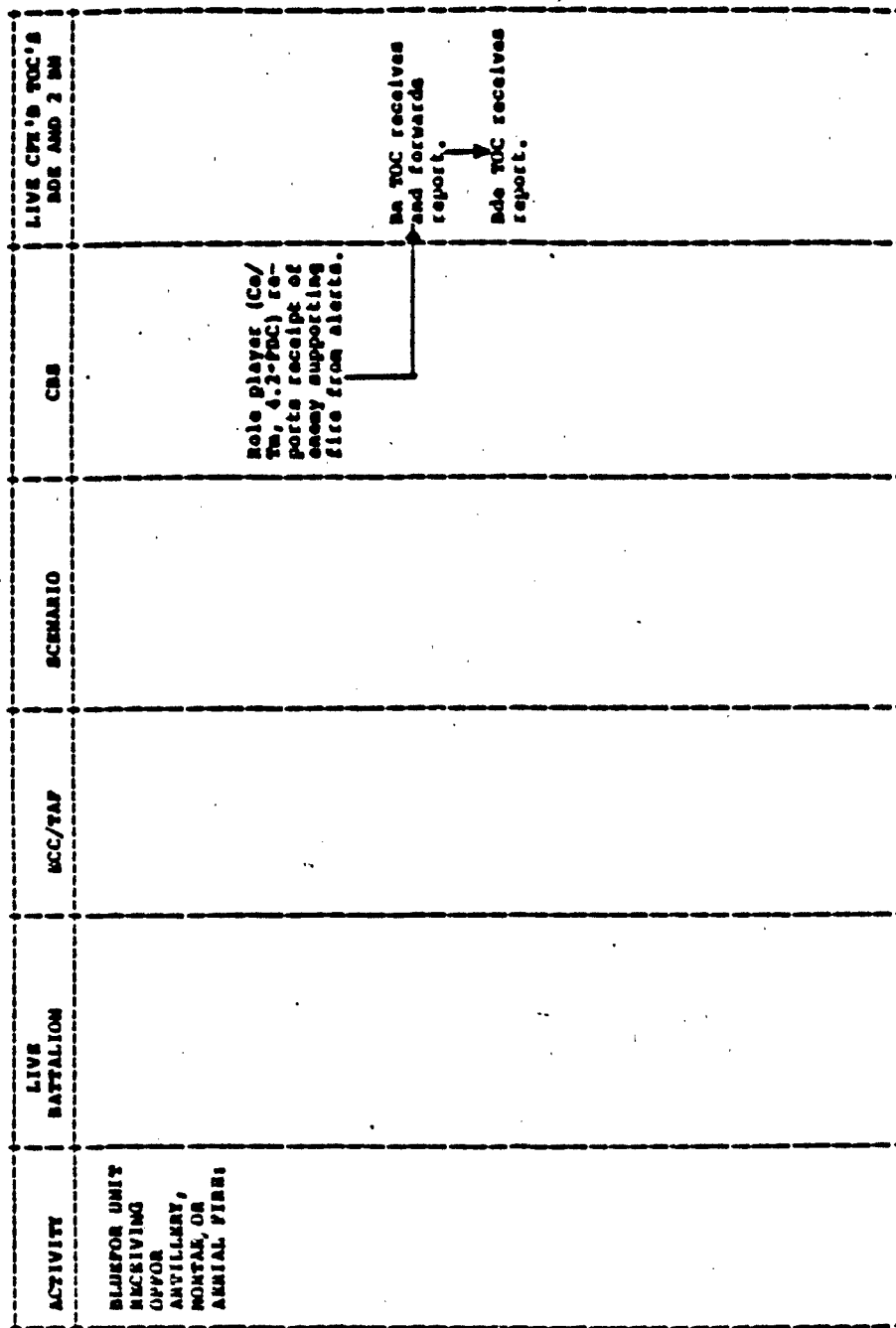


Figure 40. Operational concept for shelrep/mortrep/bombrep - BLUEFOR.

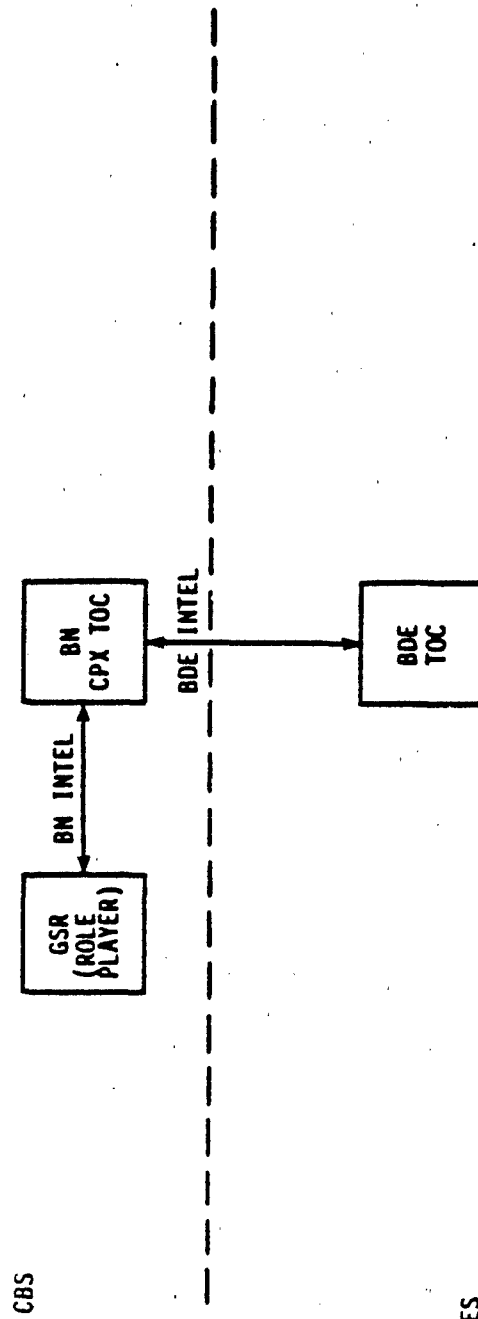


Figure 41. Ground surveillance radar (GSR) location - BLUEFOR.

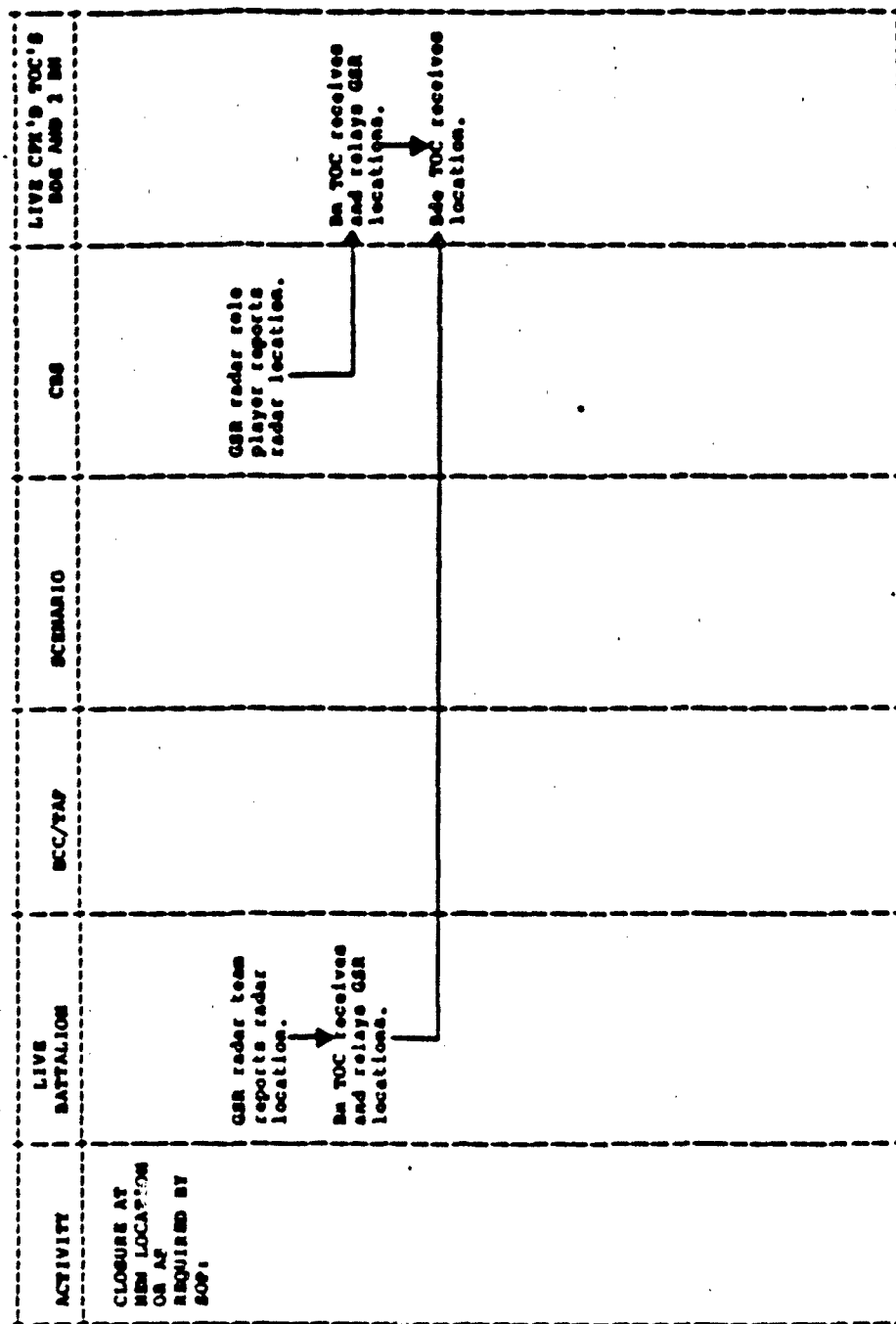


Figure 42. Operational concept for ground surveillance radar (GSR) location - BLUEFOR.

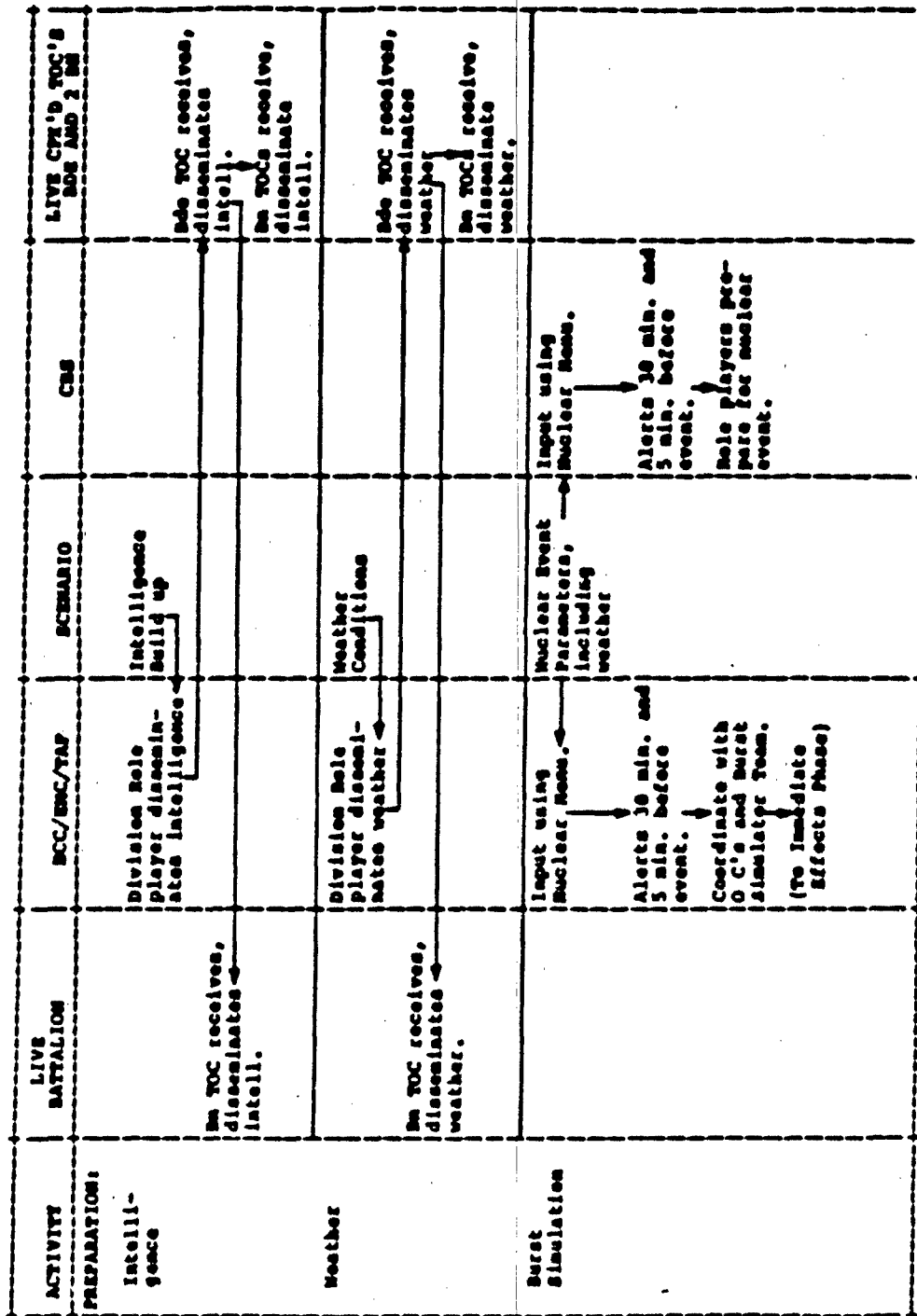


Figure 43. OPFOR on BLUEFOR nuclear event sequence.

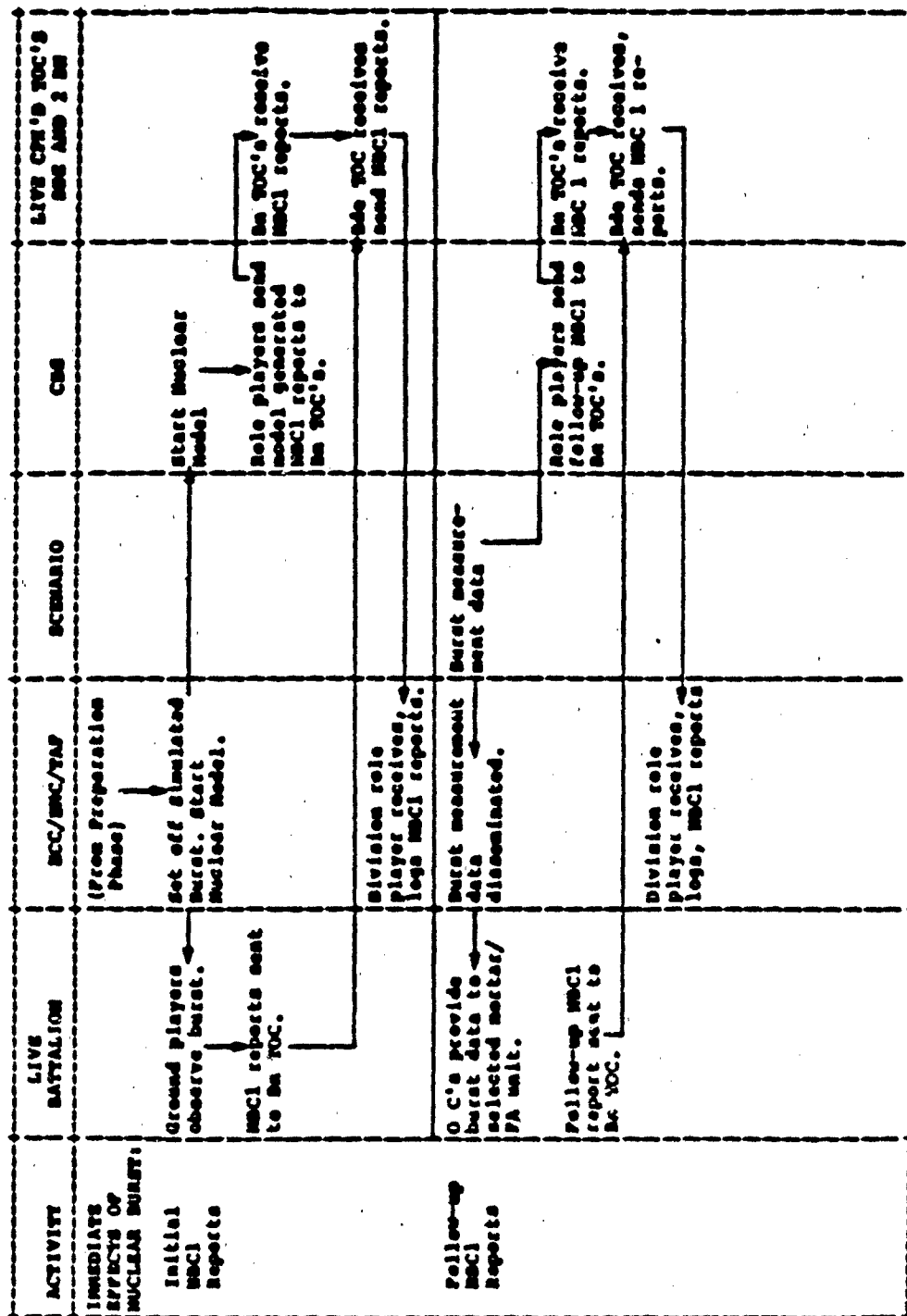


Figure 43. OPFOR on BLUEFOR nuclear event sequence (continued).

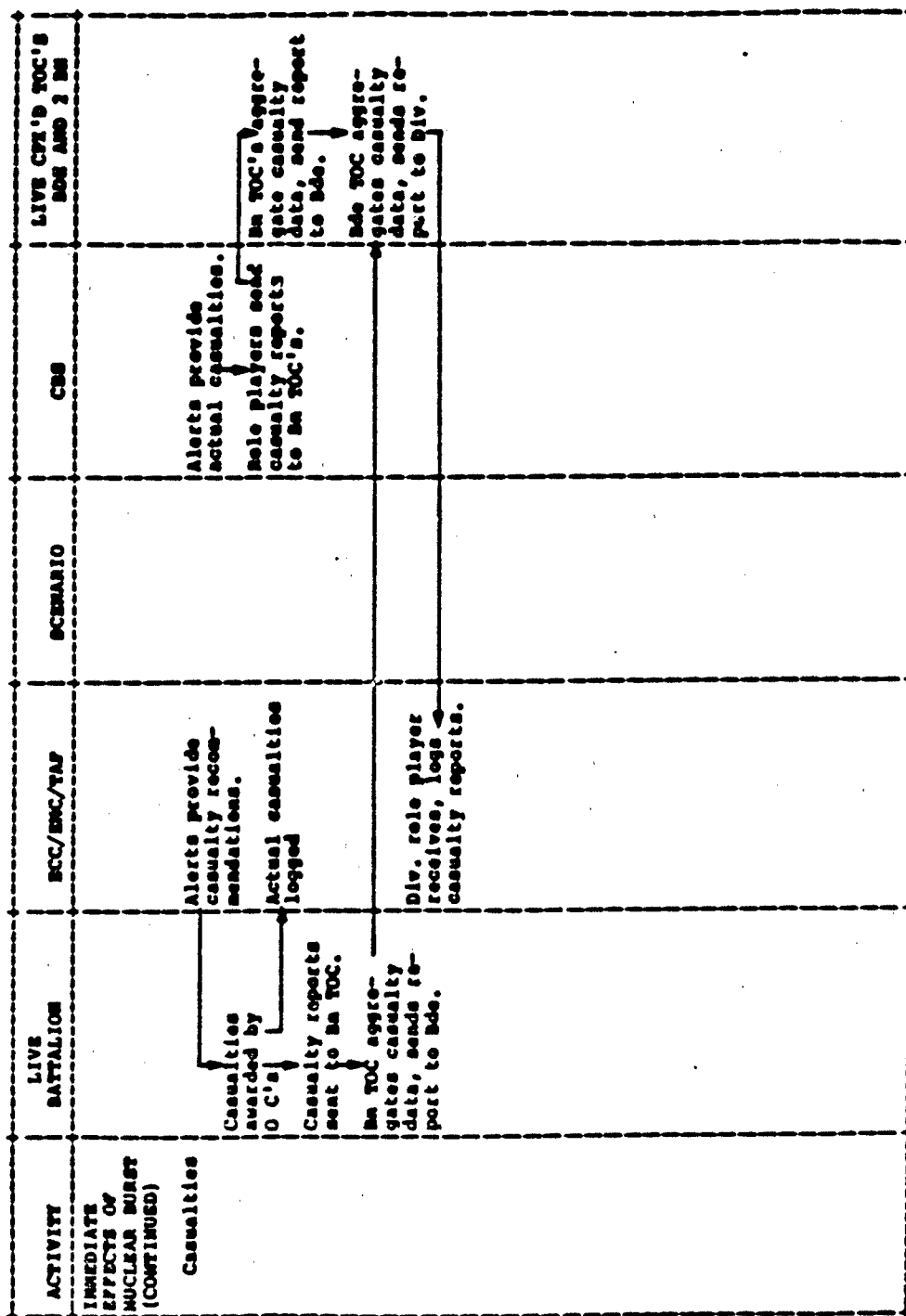


Figure 43. OPFOR on BLUEFOR nuclear event sequence (continued).

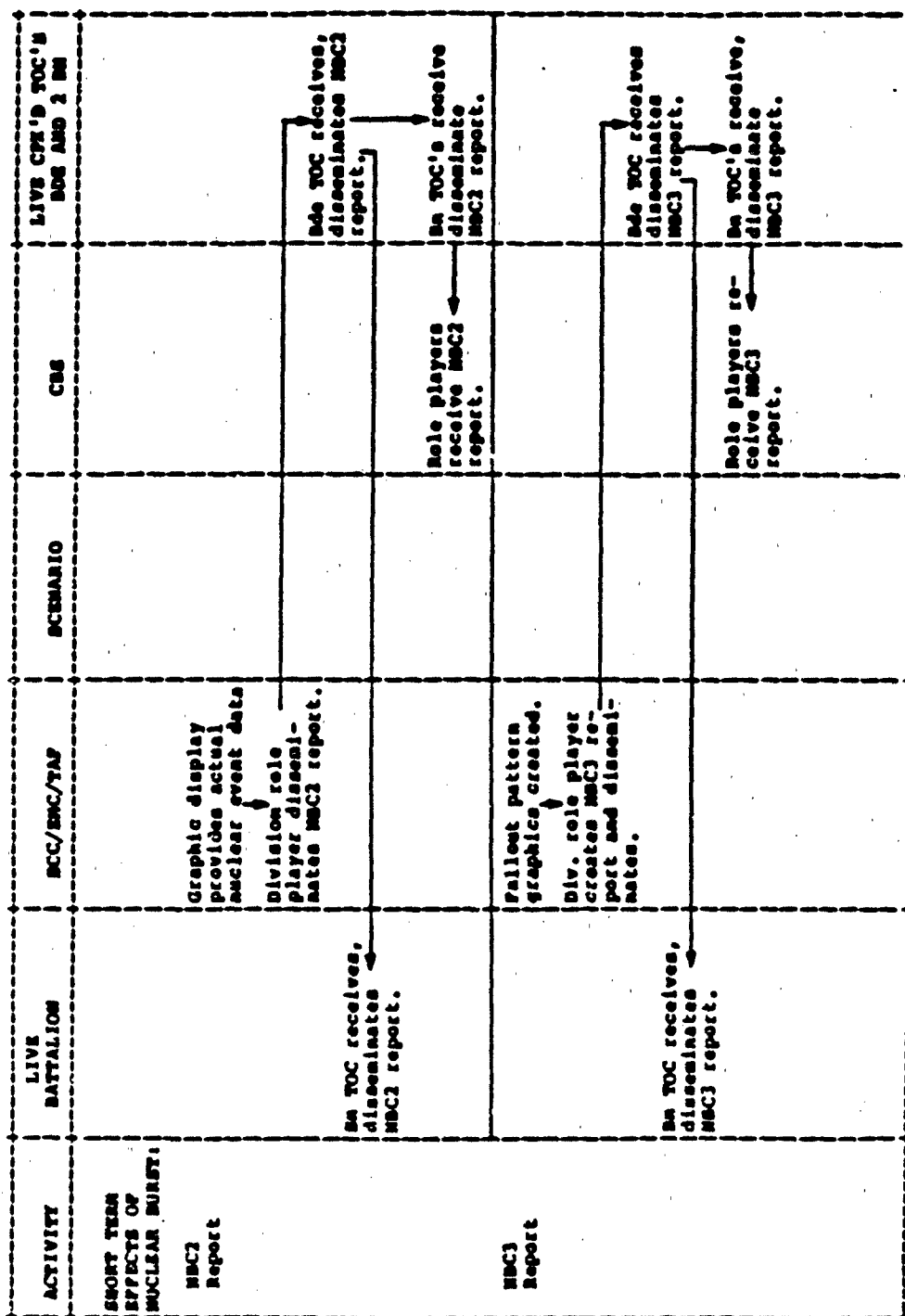


Figure 43. OPFOR on BLUEFOR nuclear event sequence (continued).

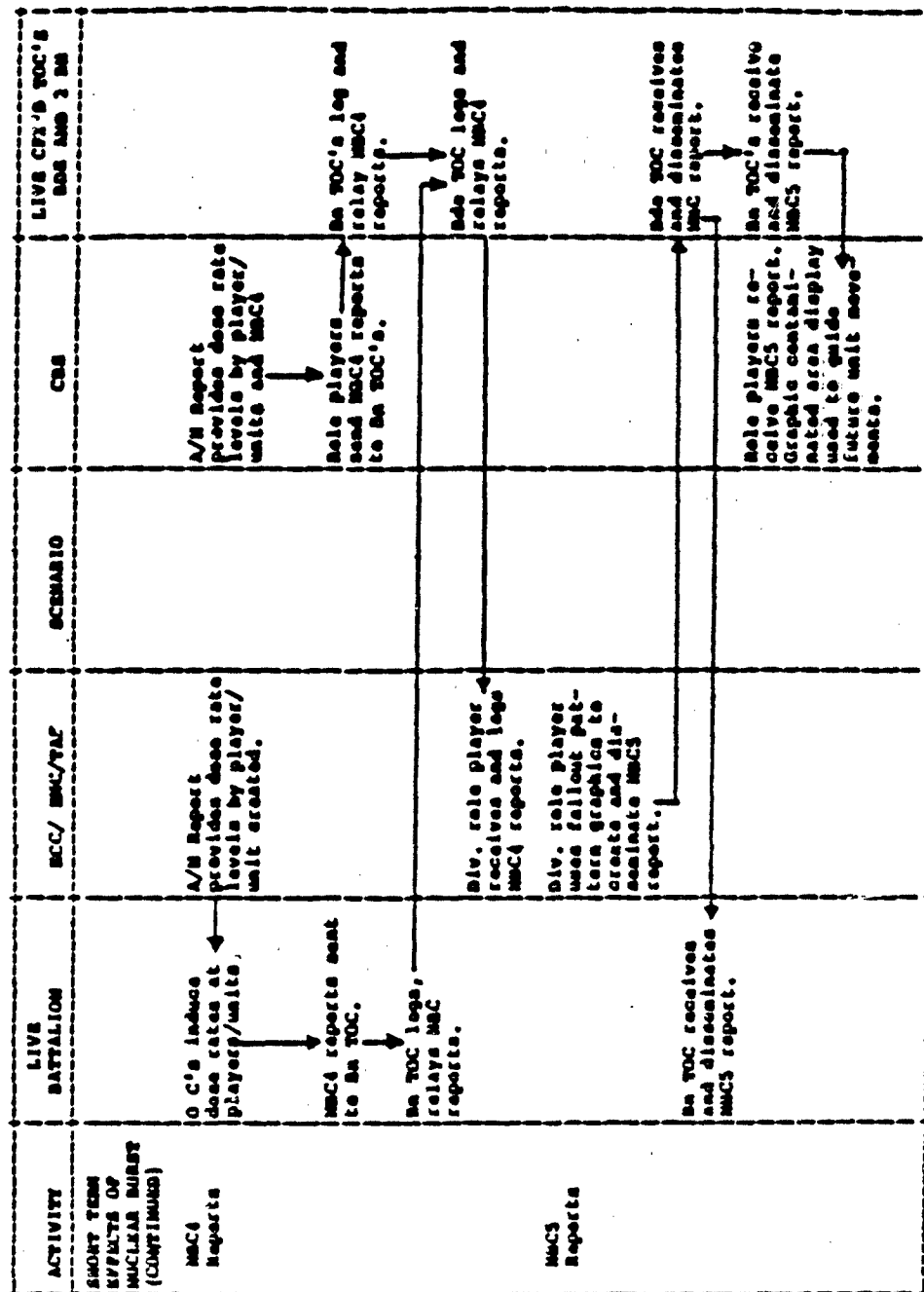


Figure 43. OPFOR on BLUEFOR nuclear event sequence (continued).

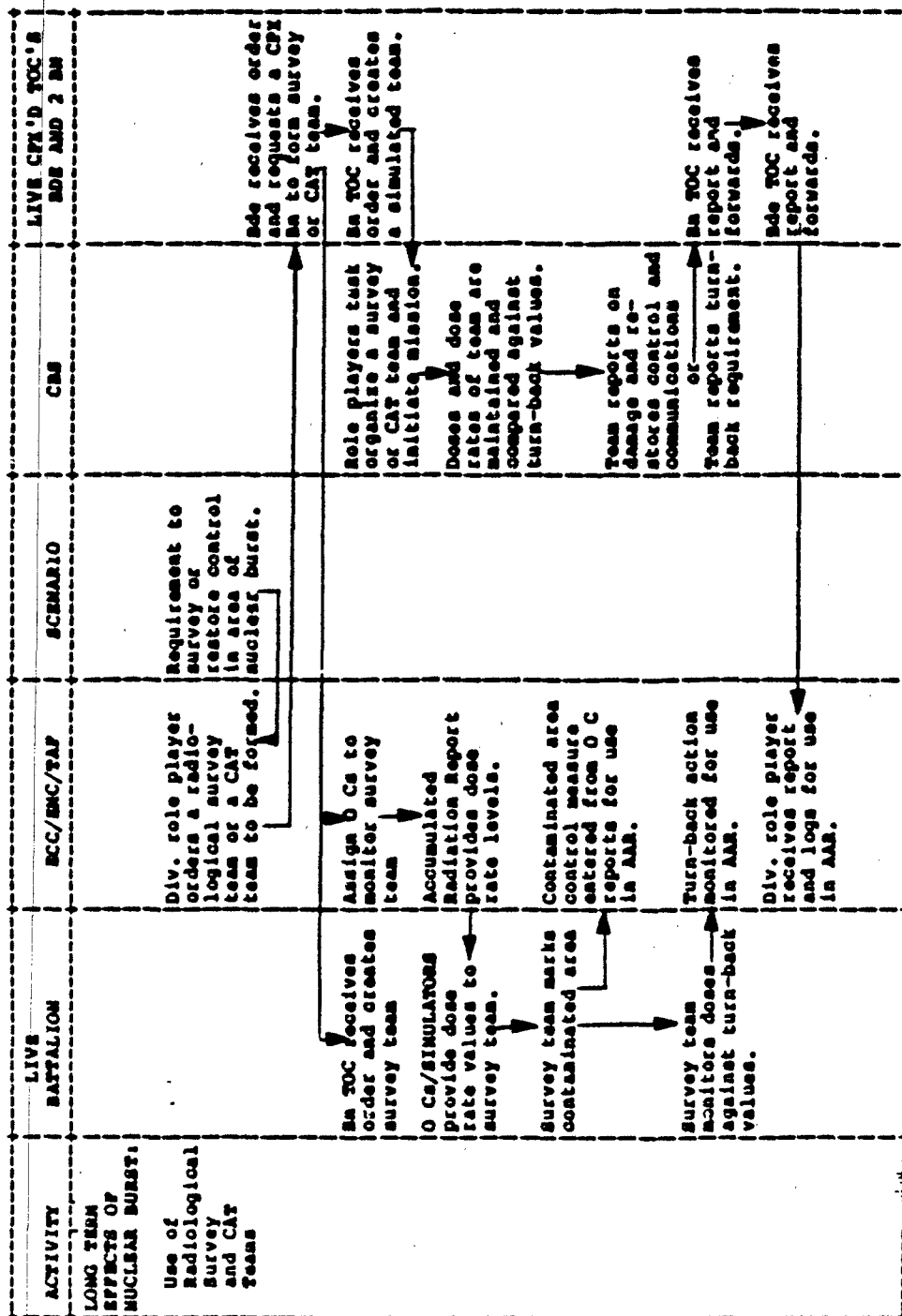


Figure 43. OPFOR on BLUEFOR nuclear event sequence (continued).

ACTIVITY	LIVE BATTALION	ECC/EMC/TAF	SCENARIO	CBS	LIVE CPT'S TOC'S BDE AND 2 BN
LONG-TERM EFFECTS OF NUCLEAR BURST (CONTINUED)					
Decontamination					
	Div. role player orders establishment of Decon Station, for the Brigade to rotate units through.		Requirement to establish decontamination station.		
	Bn TOC receives plan and orders unit movements to decontaminate.			Role player establishes decontamination area control measure, to facilitate unit movement.	Bde TOC receives order and creates decontamination plan for rotating troops through decontamination.
	Units undergo decontamination.				
	Results reported.				
	Bn TOC monitors decontamination process, notifies Bde.				
		Analyst tags unit as decontaminated to adjust dose rate.		Role players move units to undergo decontamination. Schedule coordinated with live decon unit.	Bn TOC's receive plan and order unit movements to decontaminate.
				Unit tagged as decontaminated to adjust dose rate.	
					Bde TOC monitors decontamination process, notifies Div.
		Div. role player receives report and logs for AAR purposes.			

Figure 43. OPFOR on BLUEFOR nuclear event sequence (concluded).

little, if any, effects will be detected by the BLUEFOR. The nuclear model will determine the amount of OPFOR casualties; however, such casualties will be awarded automatically for simulated OPFOR and awarded for live OPFOR via the standard Observer Controller (OC)/OPFOR communication methods currently used for indirect fire.

The format and content requirements for the NBC reports are defined in Army doctrine. Stimuli for these reports must contain the appropriate data to allow proper construction of the NBC report. Figure 45 shows the data requirements for NBC reports resulting from a nuclear event involving CPX battalions. The source of each data item in each report is identified. Similarly, Figure 46 shows the requirements and sources of data for nuclear NBC reports relating to the live battalion (using EMC/TAF). Figure 47 depicts overall NBC activity for the BLUEFOR.

1.3.4.2 BLUEFOR Unit Radiation Status - For a nuclear event, contamination patterns shall be established from fallout predictions which use yield, Height of Burst (HOB), and upper wind profile data. The model shall integrate dose rate over time by unit and shall produce an Accumulated Radiation Report. This information shall be provided to the OCs and/or to the company/team role players, or shall be disseminated via field simulators.

The OCs or simulators shall provide dose levels to platoon level units, who shall report to the company/team levels.

Figure 48 illustrates the operational relationships for determining unit radiation status within the model.

1.3.4.3 Chemical Play - For reasons similar to those described for nuclear play above, the training of brigades in chemical warfare at the NTC requires special coordination and planning. Figure 49 shows the interactions required for various activities occurring at different phases of an OPFOR chemical attack. The same interactions will occur for a BLUEFOR retaliation-in-kind, except that authority for use of chemical weapons will be disseminated by the division role player, rather than through dissemination of enemy intelligence. Also, due to troop safety requirements, effects of BLUEFOR chemical weapons would be minimized on BLUEFOR units. As with nuclear weapons, OPFOR casualties will be assessed and awarded either automatically for simulated OPFOR units, or by OCs for live OPFOR units.

Figure 50 shows the data requirements and sources for NBC reports due to chemical weapons involving CPX battalions. Similarly, Figure 51 shows the requirements and sources of data for chemical NBC reports relating to the

LINE	MEANING	TYPE OF DATA		SOURCE OF DATA	
		INITIAL REPORT	FOLLOW-UP REPORT	ROLE PLAYED	COMPUTER-GENERATED
A	STRIKE SERIAL NUMBER	CALL SIGN OF OBSERVER	NO. ASSIGNED BY DIV	SCENARIO	
B	OBSERVER LOCATION	UTM COORDINATES	UTM COORDINATES		A/N OUTPUT
C	AZIMUTH (FROM OBSERVER TO LOCATION OF ATTACK)	DEGREES OR MILS. GRID OR MAGNETIC	DEGREES OR MILS. GRID OR MAGNETIC		A/N OUTPUT
D	DATE/TIME OF ATTACK	INCLUDE	INCLUDE		A/N OUTPUT
F	LOCATION OF ATTACK	ROUGH ESTIMATE	BETTER ESTIMATE	INITIAL REPORT PROVIDES APPROX LOCATION	A/N OUTPUT, OR GRAPHIC
H	TYPE OF BURST (AIR, SURFACE OR UNKNOWN)	(USUALLY AIR OR UNKNOWN)	INCLUDE		A/N OUTPUT, OR GRAPHIC
J	FLASH-TO-BANG TIME	SECONDS	SECONDS		A/N OUTPUT
L	NUCLEAR CLOUD WIDTH ANGLE MEASURED AT H+5 MINUTES	OMIT			
M	STABILIZED NUCLEAR CLOUD-TOP (OR CLOUD-BOTTOM) ANGLE MEASURED AT H+10 MINUTES	OMIT	INCLUDE ONLY ONE OF THESE ANGULAR MEASUREMENTS FOR ANY ONE OBSERVER	FROM SCENARIO, BY FA/MORTAR UNIT	

Figure 45. CBS data requirements for NBC reporting - nuclear events.

NUCLEAR NBC-2 REPORTS - CBS

LINE	MEANING	TYPE OF DATA	SOURCE OF DATA	
			ROLE PLAYED	COMPUTER-GENERATED
A	STRIKE SERIAL NUMBER	ASSIGNED BY DIVISION AFTER RECEIPT OF NBC-1 TAKEN FROM NBC-1 SYNTHESIS DETERMINED BY CORE/CNL OFF FROM TWO OR MORE NBC-1 RPTS DETERMINED BY SYNTHESIS OF INFORMATION IN TWO OR MORE NBC-1 RPTS DETERMINED BY CORE/CNL OFF FROM FOLLOW-UP NBC-1 RPTS	SCENARIO	GRAPHIC
B	DATE/TIME OF ATTACK			
F	LOCATION OF ATTACK		SCENARIO, OR	GRAPHIC
H	TYPE OF BURST (AIR, SURFACE)		SCENARIO, OR	GRAPHIC
D	ESTIMATED YIELD (KT)			GRAPHIC

NUCLEAR NBC-3 REPORTS - CBS

LINE	MEANING	TYPE OF DATA	SOURCE OF DATA	
			ROLE PLAYED	COMPUTER-GENERATED
A	DIRECTION MEASURED CLOCKWISE FROM GRID NORTH TO LEFT, THEN RIGHT, RADIAL LINES OF FALLOUT PATTERN EFFECTIVE WINDSPEED, (KMPH) 3 DIGITS; DOWNWIND DISTANCE OF ZONE 1 (KM) 3 DIGITS; CLOUD RADIUS (KM) 2 DIGITS	(SEE LINE A, NBC-2 REPORTS ABOVE)	SCENARIO	A/N OUTPUT, GRAPHIC
D		(SEE LINE D, NBC-2 REPORTS ABOVE)		
F		(SEE LINE F, NBC-2 REPORTS ABOVE)	SCENARIO	A/N OUTPUT
V		DEGREES OR MILS, 4 DIGITS EACH		
Z		DETERMINED FROM ESTIMATED YIELD AND UPPER WIND DATA BY CBRE. FOR WINDSPEEDS LESS THAN 8 KMPH ONLY THE 3 DIGITS OF THE ZONE 1 DISTANCE ARE USED		A/N OUTPUT

Figure 45. CBS data requirements for NBC reporting - nuclear events (continued).

NUCLEAR NBC-4 REPORTS - CBS

LINE	MEANING	TYPE OF DATA		SOURCE OF DATA	
		INITIAL REPORT	SUBSEQUENT REPORTS	ROLE PLAYED	COMPUTER-GENERATED
Q	LOCATION OF READING	UTM COORDINATES READING AND "INITIAL"	UTM COORDINATES READING AND APPROPRIATE WORD "INCREASING," "PEAK," OR "DECREASING:"		SIMULATOR/ A/N OUTPUT SIMULATOR/ A/N OUTPUT
R	DOSE RATE (RAD/HR); THE WORDS "INITIAL," "INCREASING," "PEAK," OR "DECREASING" MAY BE ADDED.				
S	DATE/TIME OF READING	APPROPRIATE DATA	APPROPRIATE DATA		A/N OUTPUT

NOTE: A SINGLE UNIT CAN SEND MULTIPLE SETS OF LINES Q, R, S FOR READINGS AT VARIOUS LOCATIONS. THIS IS ESPECIALLY APPROPRIATE FOR RECONNAISSANCE AND RADIOLOGICAL SURVEY MISSIONS.

Figure 45. CBS data requirements for NBC reporting - nuclear events (continued).

NUCLEAR NBC-5 REPORTS - CBS

LINE	MEANING	TYPE OF DATA	SOURCE OF DATA	
			ROLE PLAYED	COMPUTER-GENERATED
A	STRIKE SERIAL NUMBER(S) (IF KNOWN)	ASSIGNED BY DIVISION	SCENARIO	
O	REFERENCE DATE/TIME FOR ESTIMATED CONTOURS WHEN <u>H+1 HOUR IS NOT</u> <u>USED (LINE T)</u>	INCLUDE WHEN MULTIPLE NUCLEAR EVENTS HAVE OCCURRED	SCENARIO	
T	H+1 DATE/TIME	INCLUDE APPROPRIATE DATE/TIME		A/N OUTPUT
W	100 RAD/HR CONTOUR LINE COORDINATES	UTM COORDINATES		SIMULATOR/ GRAPHIC
X	20 RAD/HR CONTOUR LINE COORDINATES	UTM COORDINATES		SIMULATOR/ GRAPHIC

Figure 45. CBS data requirements for NBC reporting - nuclear events (concluded).

NUCLEAR NBC-1 REPORTS - EMC/TAP

LINE	MEANING	TYPE OF DATA		SOURCE OF DATA	
		INITIAL REPORT	FOLLOW-UP REPORT	ROLE/FREE PLAY	COMPUTER-GENERATED
A	STRIKE SERIAL NUMBER	CALL SIGN OF OBSERVER	NO. ASSIGNED BY DIV	SCENARIO	
B	OBSERVER LOCATION	UTM COORDINATES	UTM COORDINATES	PLAYER	
C	AZIMUTH (FROM OBSVR TO LOCATION OF ATTACK)	DEGREES OR MILS, GRID OR MAGNETIC	DEGREES OR MILS, GRID OR MAGNETIC	PLAYER	
D	DATE/TIME OF ATTACK	INCLUDE	INCLUDE	PLAYER	
F	LOCATION OF ATTACK	ROUGH ESTIMATE	BETTER ESTIMATE	PLAYER	
H	TYPE OF BURST (AIR, SURFACE OR UNKNOWN)	(USUALLY AIR OR UNKNOWN)	INCLUDE	PLAYER	
J	FLASH-TO-BANG TIME	SECONDS	SECONDS	PLAYER	
L	NUCLEAR CLOUD WIDTH ANGLE MEASURED AT H+5 MINUTES	OMIT	} INCLUDE ONLY ONE OF THESE ANGULAR MEASUREMENTS FOR ANY ONE OBSERVER	O C INDUCED	A/N OUTPUT
M	STABILIZED NUCLEAR CLOUD-TOP (OR CLOUD-BOTTOM) ANGLE MEASURED AT H+10 MINUTES	OMIT		O C INDUCED	A/N OUTPUT

Figure 46. EMC/TAP data requirements for NBC reporting - nuclear events.

NUCLEAR NBC-2 REPORTS - EMC/TAP

LINE	MEANING	TYPE OF DATA	SOURCE OF DATA	
			ROLE/FREE PLAY	COMPUTER-GENERATED
A	STRIKE SERIAL NUMBER	ASSIGNED BY DIVISION AFTER RECEIPT OF NBC-1	SCENARIO	GRAPHIC
B	DATE/TIME OF ATTACK	TAKEN FROM NBC-1 SYNTHESIS		
F	LOCATION OF ATTACK	DETERMINED BY CODE/CHL OFF FROM TWO OR MORE NBC-1 RPTS		
N	TYPE OF BURST (AIR, SURFACE)	DETERMINED BY SYNTHESIS OF INFORMATION IN TWO OR MORE NBC-1 RPTS		
N	ESTIMATED YIELD (KT)	DETERMINED BY CODE/CHL OFF FROM FOLLOW-UP NBC-1 RPTS	SCENARIO, OR	GRAPHIC

NBC-3 REPORTS

LINE	MEANING	TYPE OF DATA	SOURCE OF DATA	
			ROLE/FREE PLAY	COMPUTER-GENERATED
A	DIRECTION MEASURED CLOCKWISE FROM GRID NORTH TO LEFT, THEN RIGHT, RADIAL LINES	(SEE LINE A, NBC-2 REPORTS ABOVE)	SCENARIO	A/M OUTPUT, GRAPHIC
B		(SEE LINE D, NBC-2 REPORTS ABOVE)		
F		(SEE LINE F, NBC-2 REPORTS ABOVE)		
Y		DEGREES OR MILS, 4-DIGITS EACH		
Z	EFFECTIVE WINDSPEED (MPH) 3 DIGITS DOWNWIND DISTANCE OF ZONE 1 (DN) 3 DIGITS; CLOUD RADIUS (DN) 2 DIGITS	DETERMINED FROM ESTIMATED YIELD (FROM SCENARIO) AND UPPER WIND DATA BY CODE (CAN BE OBTAINED FROM A COMPUTER ROUTINE INTO WHICH YIELD AND WIND DATA ARE ENTERED). FOR WINDSPEED LESS THAN 8 MPH ONLY THE 3 DIGITS OF THE ZONE 1 DISTANCE ARE USED	A/M OUTPUT	A/M OUTPUT

Figure 46. EMC/TAP data requirements for NBC reporting - nuclear events (continued).

NUCLEAR NBC-4 REPORTS - EMC/TAF

LINE	MEANING	TYPE OF DATA		SOURCE OF DATA	
		INITIAL REPORT	SUBSEQUENT REPORTS	ROLE/FREE PLAY	COMPUTER-GENERATED
Q	LOCATION OF READING	UTM COORDINATES	UTM COORDINATES	PLAYER	
R	DOSE RATE (RAD/HR); THE WORDS "INITIAL", "INCREASING", "PEAK", OR "DECREASING" MAY BE ADDED	READING AND "INITIAL"	READING AND APPROPRIATE WORD "INCREASING", "PEAK", OR DECREASING"	O C INDUCED	A/N OUTPUT/ SIMULATOR
S	DATE/TIME OF READING	APPROPRIATE DATA	APPROPRIATE DATA	O C INDUCED	A/N OUTPUT

NOTE: A SINGLE UNIT CAN SEND MULTIPLE SETS OF LINES Q, R, S FOR READINGS AT VARIOUS LOCATIONS. THIS IS ESPECIALLY APPROPRIATE FOR RECONNAISSANCE AND RADIOLOGICAL SURVEY MISSIONS.

Figure 46. EMC/TAF data requirements for NBC reporting - nuclear events (continued).

NUCLEAR NBC-5 REPORTS - EMC/TAF

LINE	MEANING	TYPE OF DATA	SOURCE OF DATA	
			ROLE/FREE PLAY	COMPUTER-GENERATED
A	STRIKE SERIAL NUMBER(S) IF KNOWN	ASSIGNED BY DIVISION	SCENARIO	
O	REFERENCE DATE/TIME FOR ESTIMATED CONTOURS WHEN H+1 HOUR IS NOT USED (LINE T)	INCLUDE WHEN MULTIPLE NUCLEAR EVENTS OCCUR	SCENARIO	
T	H+1 DATE/TIME	INCLUDE APPROPRIATE DATE/TIME		A/N OUTPUT
W	100 RAD/HR CONTOUR LINE COORDINATES	UTM COORDINATES		GRAPHIC/SIMULATOR
X	20 RAD/HR CONTOUR LINE COORDINATES	UTM COORDINATES		GRAPHIC/SIMULATOR

Figure 46. EMC/TAF data requirements for NBC reporting - nuclear events (concluded).

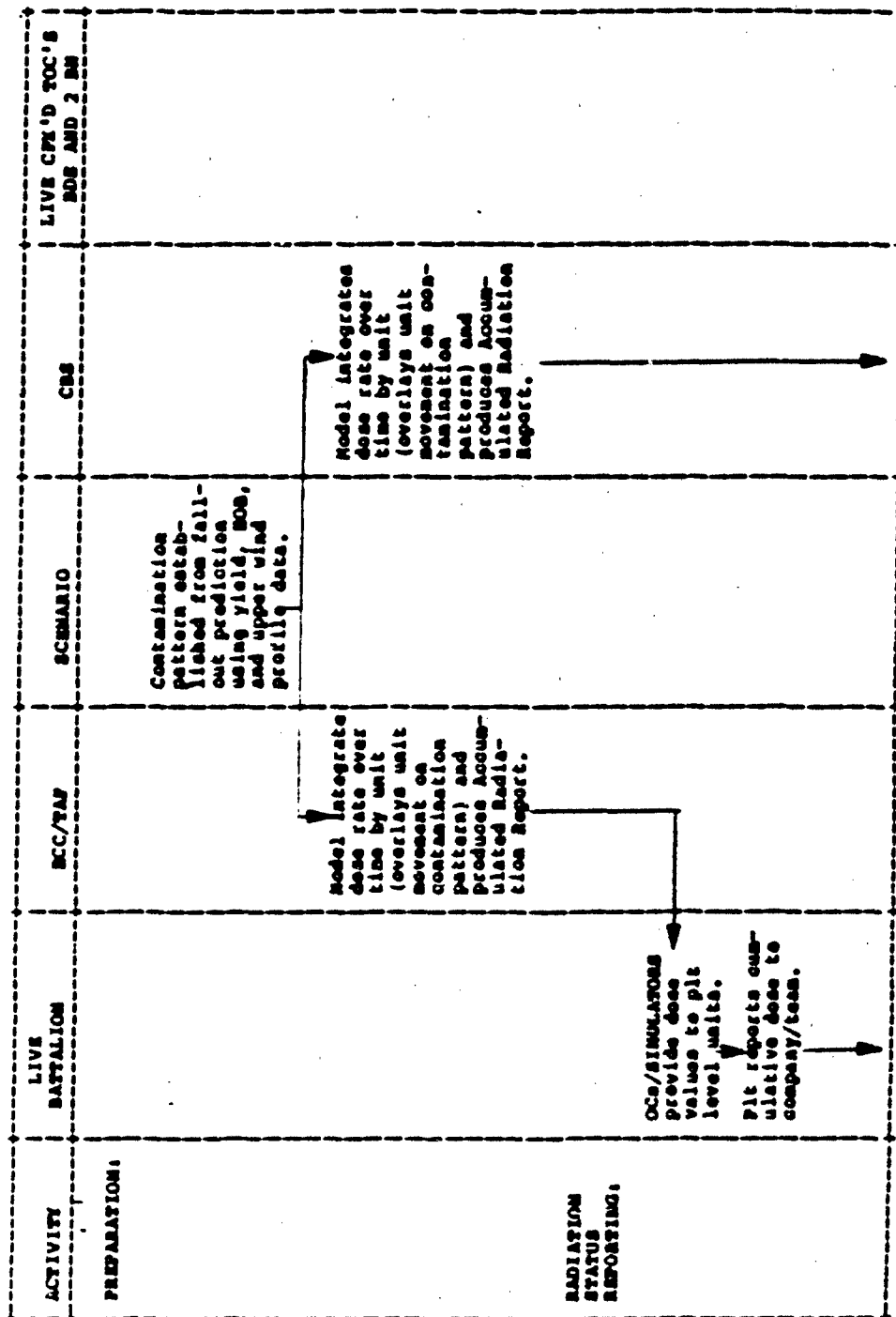


Figure 48. Operational concept for unit radiation status - BLUEFOR.

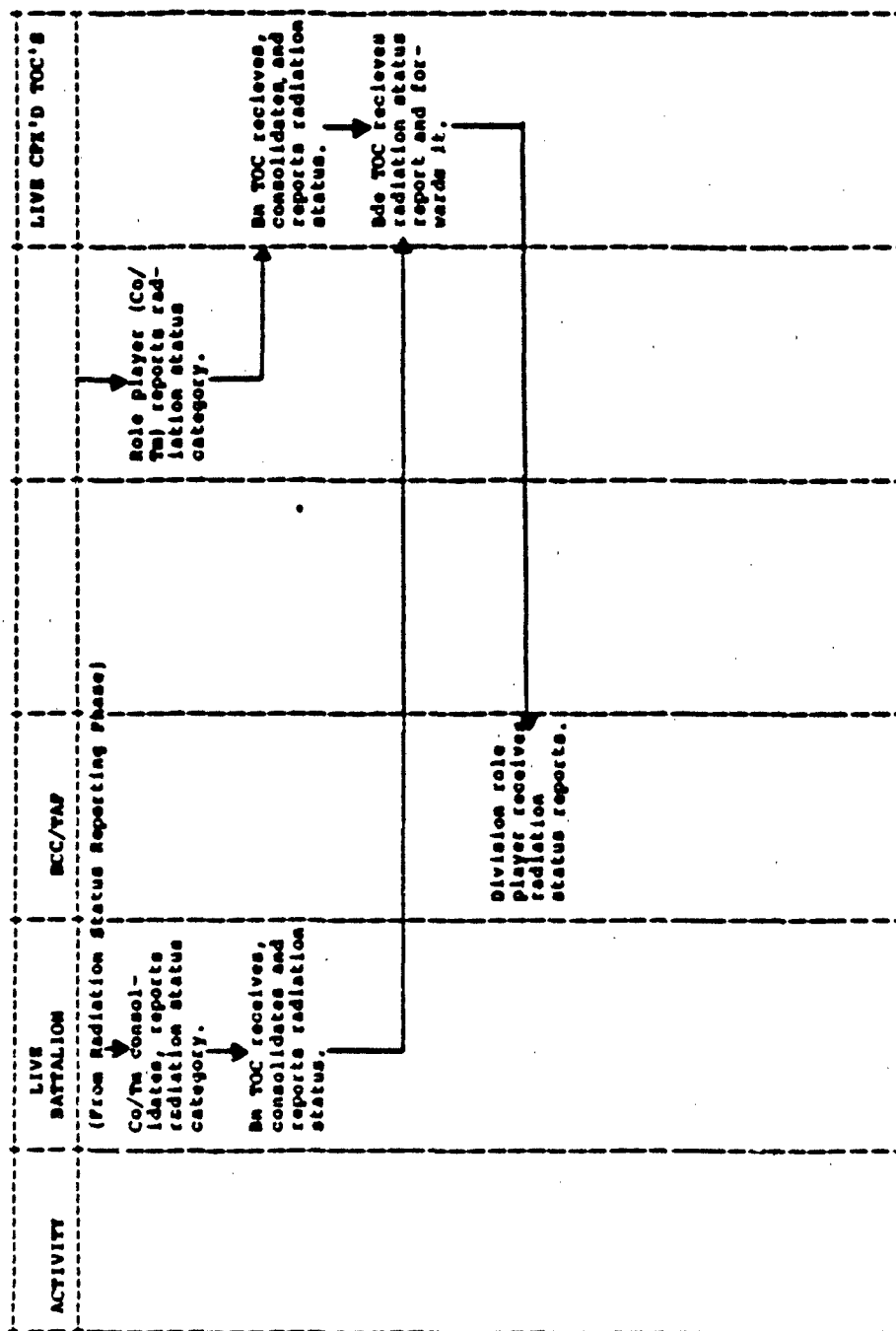


Figure 48. Operational concept for unit radiation status - BLUEFOR (continued).

ACTIVITY	LIVE BATTALION	ICC/MIC/TAF	SCENARIO	CMS	LIVE CPT'S TOC'S BOX AND 2 BN
PREPARATION:					
Intelligence	<p>Bn TOC receives, disseminates intell.</p> <p>Units assume proper MOPP condition</p>	<p>Division Role Player disseminates intelligence</p>	<p>Intelligence build-up</p>		<p>Bde TOC receives, disseminates intell.</p> <p>Bn TOCs receive, disseminate intell.</p>
Weather	<p>Bn TOC receives, disseminates weather</p>	<p>Division Role Player disseminates weather.</p>	<p>Weather Conditions</p>	<p>Role players put units into proper MOPP condition.</p>	<p>Bde TOC receives, disseminates weather.</p> <p>Bn TOCs receive, disseminate weather.</p>
Chemical Simulation		<p>Input using Chemical Menu</p> <p>Alerts 30 min. and 5 min. before event</p> <p>Coordinate with O/C's and Chemical Simulator Team</p>	<p>Chemical Event Parameters, including weather</p> <p>Alerts 30 min. and 5 min. before event</p> <p>Role players prepare for chemical event.</p>	<p>Input using Chemical Menu</p>	

Figure 49. OPFOR on BLUEFOR chemical event sequence.

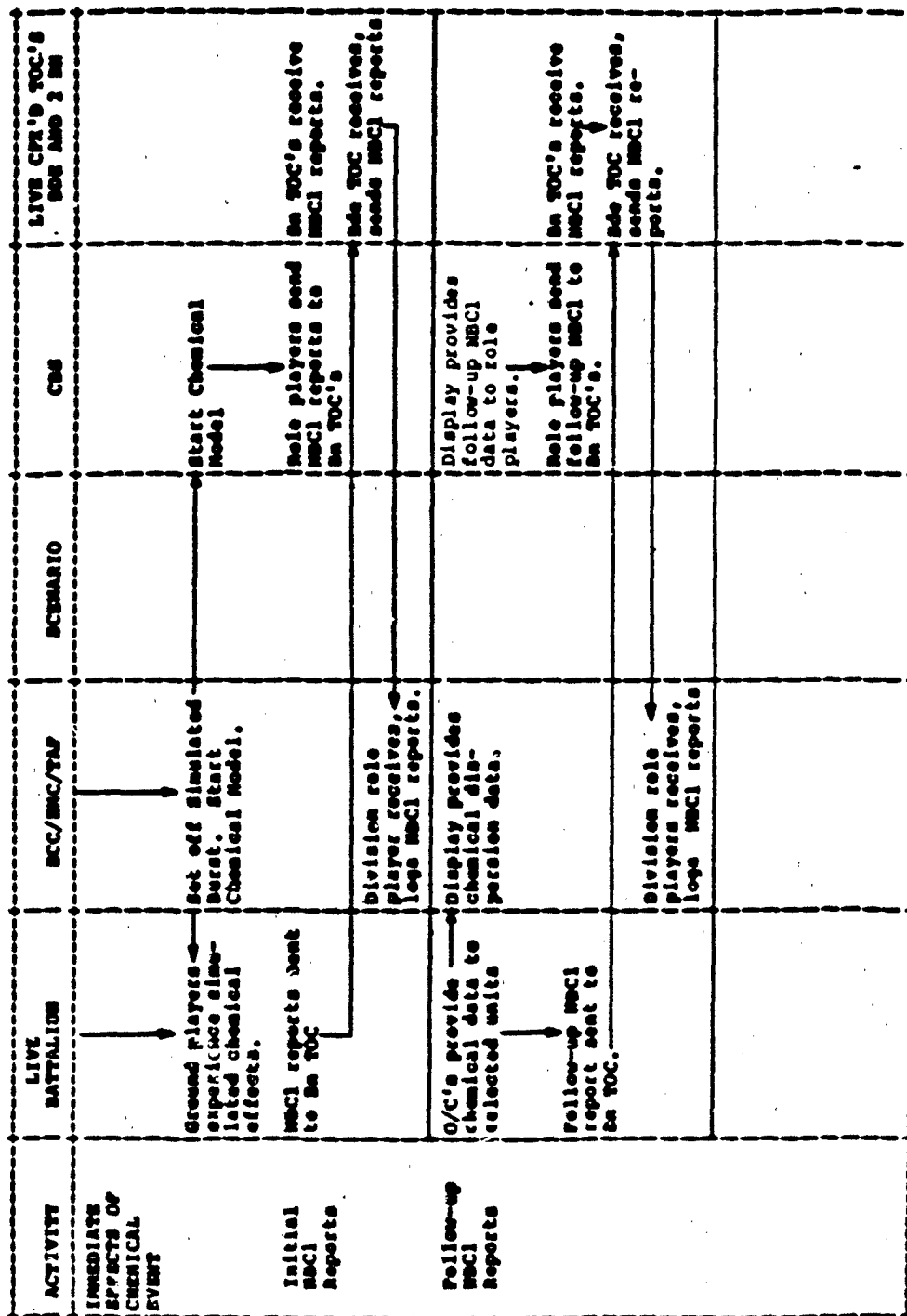


Figure 49. OPFOR on BLUEFOR chemical event sequence (continued).

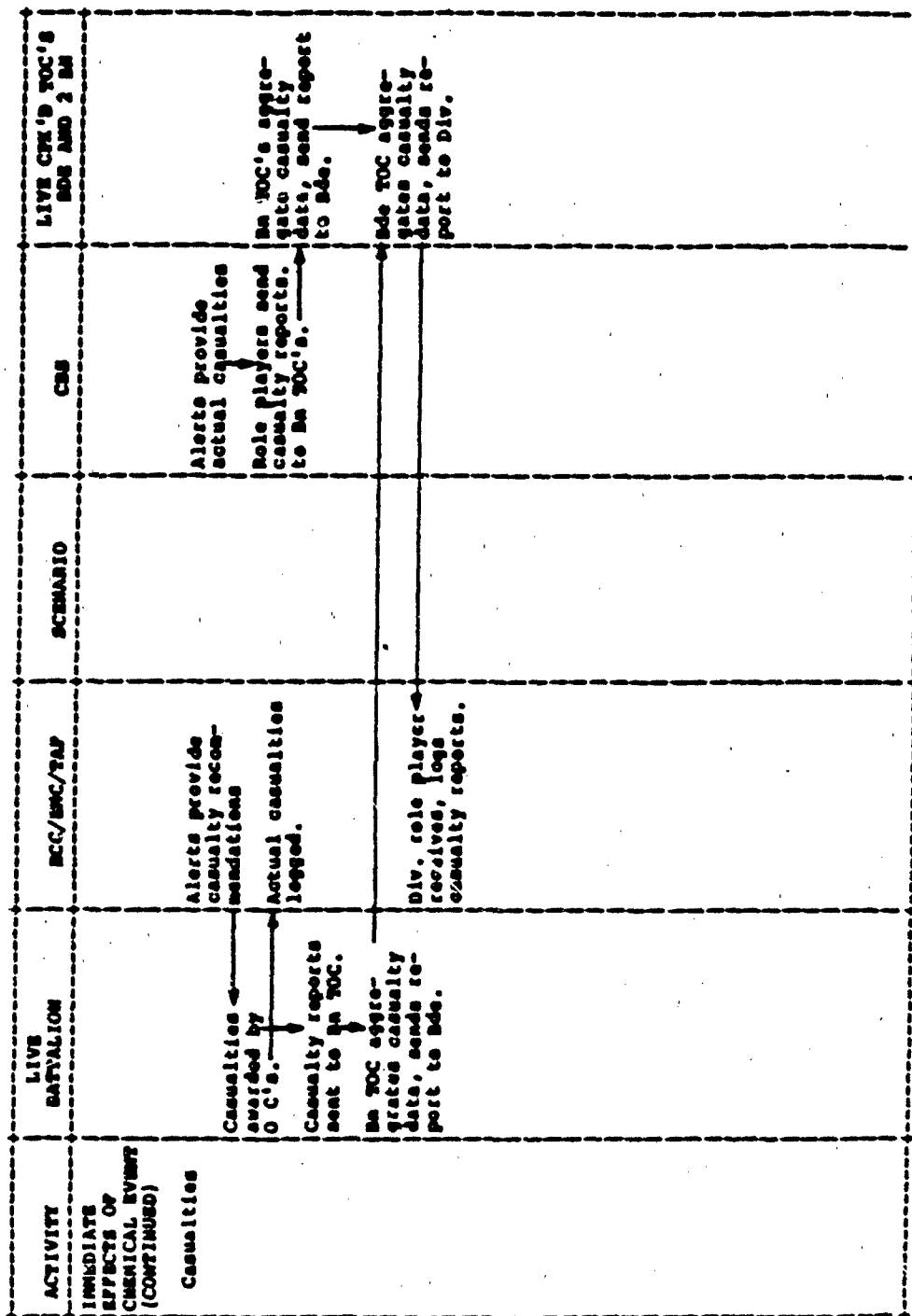


Figure 49. OPFOR on BLUEFOR chemical event sequence (continued).

ACTIVITY	LIVE BATTALION	SCC/MSC/YAF	SCENARIO	CBS	LIVE CPT'S TOC'S BOS AND 2 BS
SHORT TERM ACTIONS FOR CHEF CAL EVNMT					
MSC2 Report		Alert provides actual chemical event data. Division rele- player dissemi- nates MSC2 report.			
	Bn TOC receives, disseminates MSC2 report.				Bde TOC receives, disseminates MSC3 report.
				Rele-players receive MSC3 report.	Bn TOC's receive, disseminate MSC3 report.
MSC3 Report		Contaminated area graphics created. Div. rele-player creates MSC3 re- port and dissemi- nates.			
	Bn TOC receives, disseminates MSC3 report.				Bde TOC receives, disseminates MSC3 report.
				Rele-players re- ceive MSC3 report.	Bn TOC's receive, disseminate MSC3 report.

Figure 49. OPFOR on BLUEFOR chemical event sequence (continued).

ACTIVITY	LIVE BATTALION	BCC/MCC/TAP	SCENARIO	CBS	LIVE CPT'D TOC'S BDE AND 2 BN
SHORT TERM ACTIONS FOR CHEMICAL EVENT (CONTINUED)					
MCCS Report	O C's induce effects at players/salts. MCCS reports cont to Bn TOC. Bn TOC logs, relays MCCS reports.	Dispersion pattern graphics and alerts of continual onset of effects or ceasing of effects. Div. role player receives and logs MCCS reports. Div. role player uses dispersion pattern graphics to create and disseminate MCCS report.		Dispersion pattern graphics and alerts created. Role players send MCCS reports to Bn TOC's.	Bn TOC's log and relay MCCS reports.
					Bde TOC logs and relays MCCS reports.
	Bn TOC receives and disseminates MCCS report.				Bde TOC receives and disseminates MCCS report.
				Role players receive MCCS report, and disseminate graphic contamination area installed to guide future unit movements.	Bn TOC's receive MCCS report.

Figure 49. OPFOR on BLUEFOR chemical event sequence (continued).

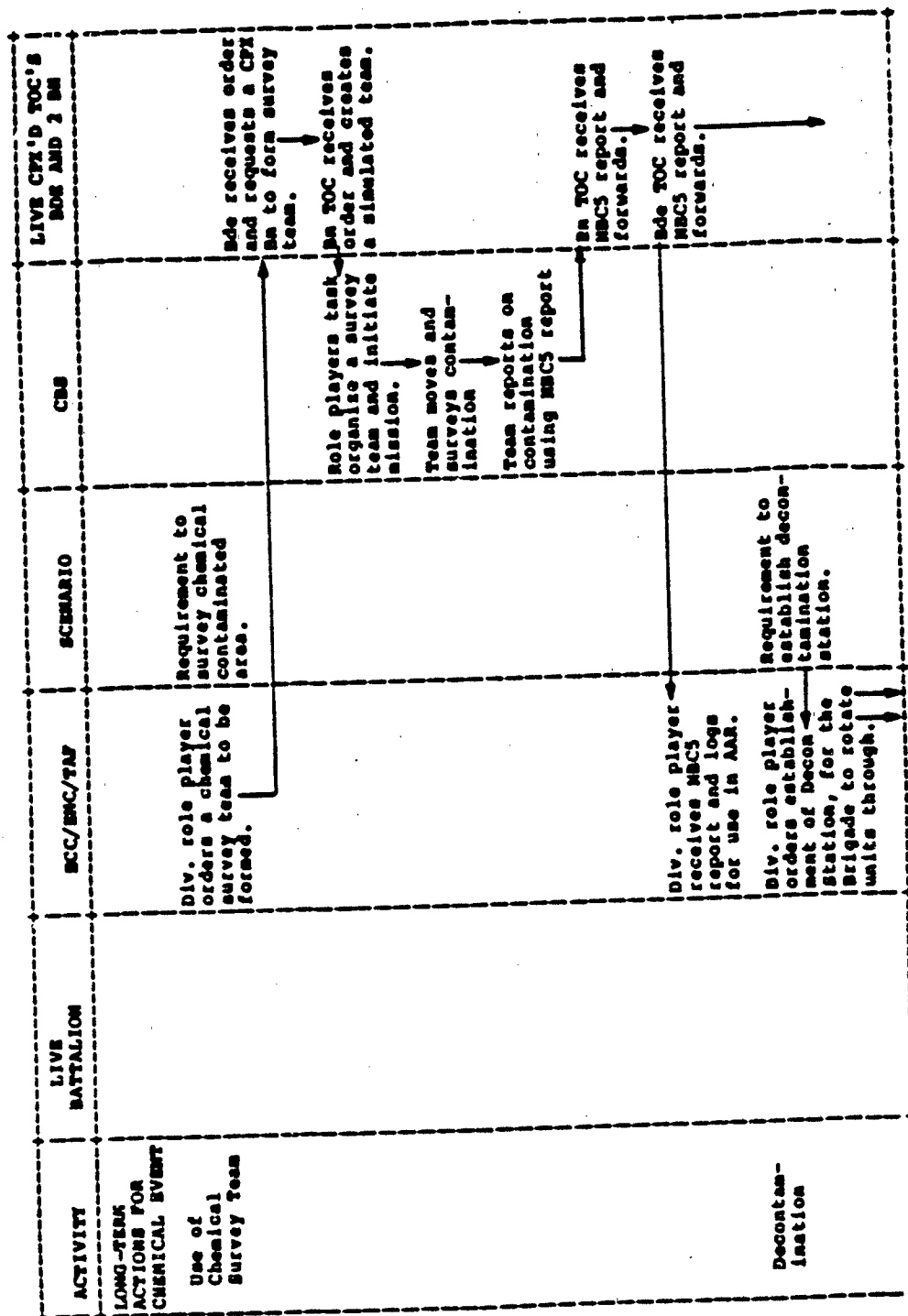


Figure 49. OPFOR on BLUEFOR chemical event sequence (continued).

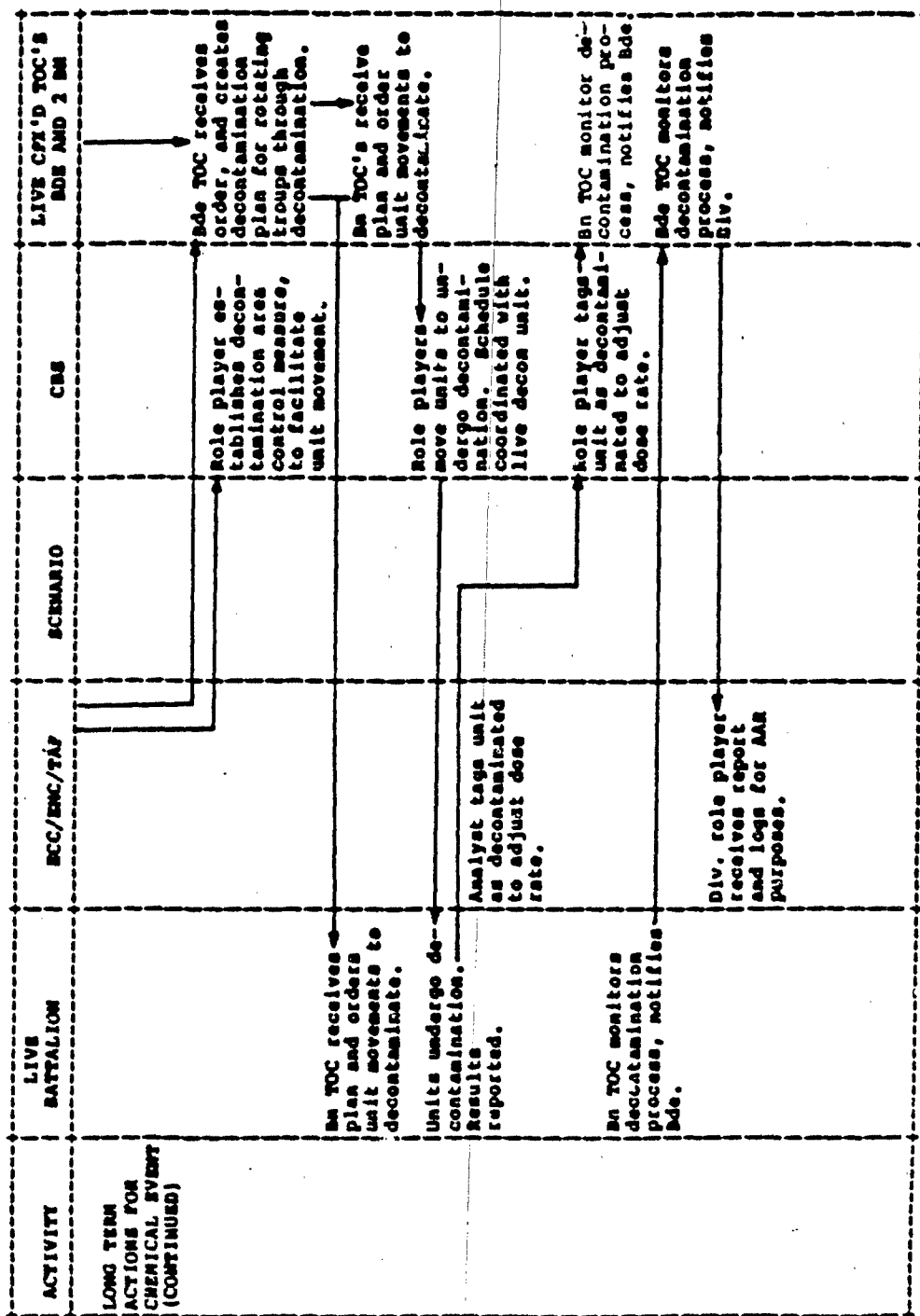


Figure 49. OPFOR on BLUEFOR chemical event sequence (concluded).

CHEMICAL NBC-1 REPORTS - CBS

LINE	MEANING	TYPE OF DATA		SOURCE OF DATA	
		INITIAL REPORT	FOLLOW-UP REPORT	ROLE PLAYED	COMPUTER-GENERATED
A	STRIKE SERIAL NUMBER	CALL SIGN OF OBSERVER	NO. ASSIGNED BY DIV	SCENARIO	A/N OUTPUT, GRAPHIC
B	OBSERVER LOCATION	UTM COORDINATES	UTM COORDINATES		A/N OUTPUT
C	AZIMUTH (FROM ABOVE TO LOCATION OF ATTACK)	DEGREES OR MILS. GRID OR MAGNETIC	DEGREES OR MILS. GRID OR MAGNETIC		A/N OUTPUT
D	DATE/TIME OF ATTACK	INCLUDE	INCLUDE		A/N OUTPUT
E	TIME ATTACK ENDED	INCLUDE	INCLUDE		A/N OUTPUT
F	LOCATION OF ATTACK	GOOD ESTIMATE	BETTER ESTIMATE	INITIAL REPORT PROVIDES APPROX. LOCATION	A/N OUTPUT, GRAPHIC
G	DELIVERY MEANS	POSSIBLY INCLUDABLE	POSSIBLY INCLUDABLE	SCENARIO	
H	TYPE OF ATTACK, TYPE OF AGENT	INCLUDE TYPE OF ATTACK	INCLUDE BOTH TYPE OF ATTACK AND TYPE OF AGENT (CHEM)		A/N OUTPUT
I	NO. OF ROUNDS OR AIRCRAFT IN THE ATTACK	INCLUDE WHEN FEASIBLE	INCLUDE WHEN FEASIBLE	SCENARIO	

Figure 50. CBS data requirements for NBC reporting - chemical event.

CHEMICAL NBC-2 REPORTS - CBS

LINE	MEANING	TYPE OF DATA	SOURCE OF DATA	
			ROLE PLAYED	COMPUTER-GENERATED
A	STRIKE SERIAL NUMBER	ASSIGNED BY DIVISION AFTER RECEIPT OF NBC-1 TAKEN FROM NBC-1 SYNTHESIS DETERMINED BY CODE/CAL OFF FROM TWO OR MORE NBC-1 RPTS DETERMINED BY SYNTHESIS OF INFORMATION IN TWO OR MORE NBC-1 RPTS	SCENARIO	
B	DATE/TIME OF ATTACK		SCENARIO	
F	LOCATION OF ATTACK		SCENARIO	
G	DELIVERY MEANS (IF KNOWN)		SCENARIO	
H	TYPE OF ATTACK AND TYPE AGENT		SCENARIO	

CHEMICAL NBC-3 REPORTS - CBS

LINE	MEANING	TYPE OF DATA	SOURCE OF DATA	
			ROLE PLAYED	COMPUTER-GENERATED
A	AREA OF EXPECTED CONTAMINATION	(SEE LINE A, NBC-2 REPORTS ABOVE)	SCENARIO	
B		(SEE LINE B, NBC-2 REPORTS ABOVE)	SCENARIO	
F		(SEE LINE F, NBC-2 REPORTS ABOVE)	SCENARIO	
F		SERIES OF WTN COORDINATES	SCENARIO, OR GRAPHIC	

Figure 50. CBS data requirements for NBC reporting - chemical event (continued).

CHEMICAL NBC-5 REPORTS - CBS

LINE	MEANING	TYPE OF DATA	SOURCE OF DATA	
			ROLE PLAYED	COMPUTER-GENERATED
A	STRIKE SERIAL NUMBER(S) (IF KNOWN)	ASSIGNED BY DIVISION	SCENARIO	
S	DATE/TIME CONTAMINATION INITIALLY DETECTED	INCLUDE	FREE PLAY BASED ON SCENARIO	
T	DATE/TIME OF LATEST RECONNAISSANCE OF CONTAMINATION IN THE AREA	INCLUDE TIME OF LATEST RECON	FREE PLAY	
X	LOCATED AREA OF CONTAMINATION	INCLUDE APPROPRIATE COORDINATES		GRAPHIC

Figure 50. CBS data requirements for NBC reporting - chemical event (concluded).

CHEMICAL NBC-1 REPORTS -- EMC/TAF

LINE	MEANING	TYPE OF DATA		SOURCE OF DATA	
		INITIAL REPORT	FOLLOW-UP REPORT	ROLE/FREE PLAY	COMPUTER-GENERATED
A	STRIKE SERIAL NUMBER	CALL SIGN OF OBSERVER	NO. ASSIGNED BY DIV	SCENARIO	
B	OBSERVER LOCATION	UTM COORDINATES	UTM COORDINATES	PLAYER	
C	AZIMUTH (FROM OBSVR TO LOCATION OF ATTACK)	DEGREES OR MILS, GRID OR MAGNETIC	DEGREES OR MILS, GRID OR MAGNETIC	O C INDUCED	A/N OUTPUT
D	DATE/TIME OF ATTACK	INCLUDE	INCLUDE	O C INDUCED	A/N OUTPUT
E	TIME ATTACK ENDED	INCLUDE	INCLUDE	O C INDUCED	A/N OUTPUT
F	LOCATION OF ATTACK	GOOD ESTIMATE	BETTER ESTIMATE	O C INDUCED	A/N OUTPUT, GRAPHIC
G	DELIVERY MEANS	POSSIBLY INCLUDEABLE	POSSIBLY INCLUDEABLE	O C INDUCED FROM SCENARIO	A/N OUTPUT
H	TYPE OF ATTACK, TYPE OF AGENT	INCLUDE TYPES OF ATK	INCLUDE BOTH TYPE OF ATTACK AND TYPE OF AGENT (CHEM)	O C INDUCED	A/N OUTPUT
I	NO. OF ROUNDS OR AIRCRAFT IN THE ATTACK	INCLUDE WHEN FEASIBLE	INCLUDE WHEN FEASIBLE	O C INDUCED FROM SCENARIO	

Figure 51. EMC/TAF data requirements for NBC reporting - chemical event.

live battalion (using EMC/TAF).

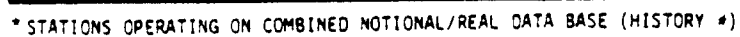
1.4 OPERATIONAL REQUIREMENTS

1.4.1 Control Room Requirements - The IBCCS operations center layout, Figure 52, presents a preliminary concept of space utilization of the existing area reserved for integrated battlefield operations. Room alterations are limited to relocating door openings from current near-corner positions to wall-center locations. The current 500 player concept of eight stations is retained except that station hardware configurations are modified to allow two additional alphanumeric terminals at four of the stations. Furthermore, preliminary human factor considerations for station layout and apparent increases in personnel density evoke the right-angled station. The four stations at the layout center are separated by partitions, or dividers, that are at least head high, to insulate noise and other distractions into four room quadrants or activity areas. The remaining four stations have been distributed around the room perimeter.

Personnel at each station are indicated by circles with number or letter codes. The numbered positions are functions, described in Figure 53, which are responsive to external CPX battalions and the brigade for simulation requirements. The simulation is implemented by the operators (interactors), coded with an "I".

1.4.2 Radio Net Allocations - Tactical communications for brigade and battalion operations are required in order that personnel who are manning the functional positions can be responsive to the CPX and thereby facilitate the simulation. Figure 54 reflects the radio nets necessary to support each of the functions. Range Monitoring and Control System (RMCS) requirements for added receiver-transmitters are necessary for the two CPX battalions for two radio nets each. Also, two receiver-transmitters will be required for division operations added to the present "Brigade Control" communication net.

Further analysis is necessary to determine the appropriate communication instruments for each operator and implications for Voice/Video Control and Editing Component (VVCEC) recording and editing and possible added video capabilities for each CPX TOC.



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Position	Name	Function
BATTALION OPERATIONS		
1	Company/Team Commander	Role plays the company team commander. Focal point for all company/team activities; coordinates efforts of FIST, XO, scout platoon leader, and combat support units role player and interacts with the CPX battalion TOC.
2	FIST	Role plays forward observer(s) with the company/team. Coordinates with company/team commander. Initiates all calls for field artillery and monitors fires to CPX battalion FDC.
3	Admin/Log (Co/Tm XO)	Role plays the company team executive officer. Coordinates administrative and logistics matters with the company/team commander, scout platoon leader and combat support units role player. Interacts with CPX battalion S1 and S4, and supports platoon and administrative section leaders (8 and 9).
4	Scout Platoon Leader	Role plays leader of scout platoon attached to the company/team. Coordinates platoon activities with company/team commander and interacts with CPX battalion TOC.
5	Combat Support Units	Role plays antitank, Vulcan, Manpad and GSR leaders of units attached to company/team. Coordinates with company/team commander and interacts with CPX battalion TOC.

Figure 53. Personnel positions.

Position	Name	Function
FIRE SUPPORT		
6	Fire Direction Center	Role plays the 4.2 mortar FDC and field artillery battery associated with the CPX battalion FDC. Reviews and executes (through the station interactor) calls for fire from the CPX battalion FDC. Also interacts with the division fire support coordination center role player.
7	Close Air Support/Army Aviation	Role plays the USAP ALO with the CPX battalion, and army aviation elements supporting the battalion. Interacts with the company/team commander, the CPX battalion FSE providing poststrike assessments and with the division USAP ALO role player.
ADMINISTRATION/ LOGISTICS		
8	Support Platoon Leader	Role plays the support platoon leaders of those logistics support elements which provide support to the CPX battalions. Interacts with the company/team executive officer role players (3), CPX battalion S4 and division administration/logistics role players.
9	Administration	Role plays CPX battalion personnel section. Interacts with company/team executive officer role players, CPX battalion S1 and division administration/logistics role players.
10	Engineer Platoon Leader	Role plays engineer platoon leader of engineer platoon attached to the CPX battalion.

Figure 53. Personnel positions (continued).

Position	Name	Function
OPFOR OPERATIONS		
11	OPFOR Maneuver Operations	Coordinates simulated OPFOR movement.
12	OPFOR Fire Support	Coordinates simulated OPFOR fire support activities.
DIVISION OPERATIONS		
13	Intelligence/Operations	Role plays both division operations officer (G3) and intelligence officer (G2). Interacts with S3 and S2 in brigade TOC.
14	Administration/Logistics	Role plays both division adjutant (G1) and supply officer (G4). Interacts with S1 and S4 in brigade TOC and administration and logistics role players.
15	Fire Support Coordination Center	Role plays division fire support coordination center. Interacts with fire direction center role player and with the CPX brigade FSE.
16	Aviation/Adjacent Units	Role plays division USAF ALO and adjacent brigade and battalion TOCs. Interacts with direct air support center which supports the CPX brigade.

Figure 53. Personnel positions (concluded).

CODE	POSITION	RADIO NET
MANEUVER OPERATIONS		
1	COMPANY COMMANDER	BN CMD
2	FIST	FA BN C/F
3	ADMIN/LOG	BN A/L
4	SCOUT PLATOON LEADER	BN CMD
5	COMBAT SUPPORT UNITS	BN CMD
FIRE SUPPORT		
6	FIRE DIRECTION CENTER	FA BN C/F
7	CLOSE AIR SUPPORT/ARMY AVIATION	FA BN C/F
ADMIN/LOG		
8	SUPPORT PLATOON LEADER	BN A/L
9	ADMIN	BN A/L
10	ENGINEER PLATOON LEADER	BN CMD
OPFOR OPERATIONS		
11	MANEUVER	NONE
12	FIRE SUPPORT	NONE
DIVISION OPERATIONS		
13	INTELL/DDS	DIV CMD/OPS DIV INTEL
14	DIVISION ADMIN/LOG	DIV A/L
15	ADJACENT UNITS	NONE
16	AVIATION	DIV CMD/OPS

Figure 54. Radio net allocations.

SECTION 2.0 HARDWARE REQUIREMENTS

2.1 COMPUTER PROCESSOR REQUIREMENTS

The hardware configuration required to support implementation of the National Training Center (NTC) Integrated Battlefield Command and Control Simulation (IBCCS) concept shall consist of the standard NTC hardware suite, including a four processor configuration of four Digital Equipment Corporation (DEC) VAX 11/780 computers, shared memory for high speed interprocessor communication, system disks, mass data storage disks, high speed magnetic tape drives for data archiving, and a high speed line printer.

Each of the VAX computers shall consist of the 11/780 32 bit Central Processing Unit (CPU), a floating point accelerator, a minimum of four megabytes of error correcting code MOS memory, a programmable real time clock and a battery time-of-year clock. Also included in each CPU shall be a diagnostic/control console which provides the operator control console, bootstrap, local diagnostics and a telephone coupler that can be used to call one of DEC's diagnostic service centers. There shall be a battery backup system which shall provide main memory power for 40 megabyte-minutes. All peripheral devices shall communicate with the CPU and memory by way of two separate 2 Megabyte/second Massbusses and a 1.2 Megabyte/second Unibus.

The central computers shall be connected to the controller station graphics processors via high speed Input/Output (I/O) channels (ports) connected to the VAX Unibus. These I/O channels shall accommodate eight graphics processors each.

Figure 55 depicts the current Core Instrumentation Subsystem (CIS) hardware configuration and indicates the equipment which will be used by the IBCCS function.

2.2 CONTROLLER STATIONS

The Command Battle Simulation (CBS) and Exercise Monitoring and Control/Training Analysis Feedback (EMC/TAF) and Exercise Coordination and Control/Training Analysis Feedback (ECC/TAF) controller stations shall consist of a high resolution color monitor, a 20 megabyte Winchester disk drive and controller, alphanumeric terminals, intercom stations with headsets and optionally, a video color monitor. A total of five stations shall be required for CBS functions, with four of the stations consisting of a high resolution color monitor, a graphics tablet with pen, and

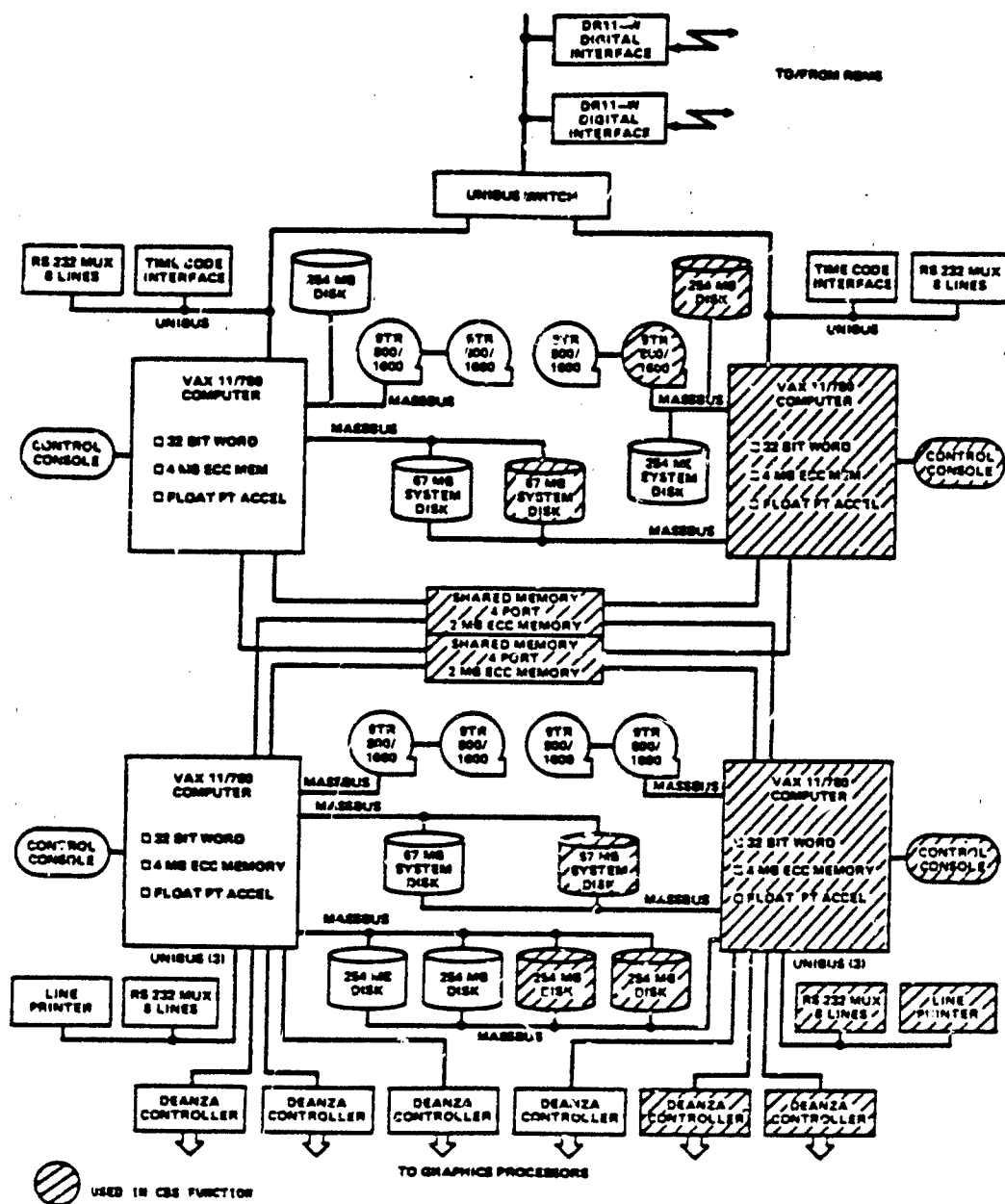
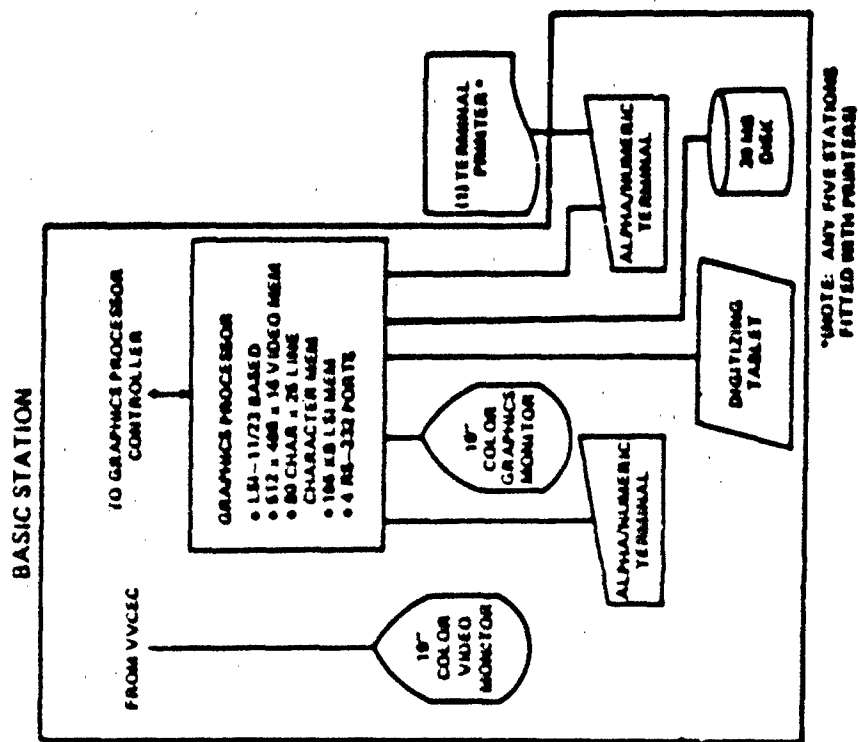


Figure 55. CIS computer hardware configuration.

four alphanumeric terminals with keyboards. The remaining CBS station and three ECC/TAF stations shall consist of a high resolution color monitor, a graphics tablet with pen and two alphanumeric terminals with keyboards. Sufficient intercom stations shall be provided to facilitate tactical communications between the role players and the elements being trained. Color video monitors shall not be a required piece of equipment at each CBS station; however, a video monitor may be required at one or more of the ECC/TAF stations.

Figure 56 depicts the standard CIS controller station hardware configuration.



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ALL MTC CONTROLLER STATIONS
HAVE BASIC STATION HARDWARE

16 EMC/TAF

8 ETB

2 REAL-TIME VIDEO CONTROL (2)

2 AAR PREP (2)

2 AAR THEATER (2)

1 SMEC

5 CBS (3)

3 ECC/TAF (4)

(1) THIS DEVICE WILL NOT BE STANDARD
AT ALL CONTROLLER STATIONS. IT
MAY BE MOVED FROM STATION TO
STATION.

(2) BASIC STATION WITH ADDITIONAL
VIDEO EQUIPMENT.

(3) ONE BASIC STATION WITHOUT COLOR
MONITOR AND FOUR BASIC STATIONS
WITH TWO ADDITIONAL ALPHANUMERIC
TERMINALS, AND NO COLOR VIDEO
MONITOR.

(4) BASIC STATIONS WITH OPTIONAL
COLOR VIDEO MONITOR.

Figure 56. CIS controller station hardware configuration.

SECTION 3 FUNCTIONAL REQUIREMENTS

3.1 GENERAL IBCCS REQUIREMENTS

The Integrated Battlefield Command and Control Simulation (IBCCS) concept shall be provided through three National Training Center (NTC) software functions: Command Battle Simulation (CBS), Exercise Coordination and Control/Training Analysis Feedback (ECC/TAF) and Exercise Monitoring and Control/Training Analysis Feedback (EMC/TAF). CBS shall provide data for all simulated units, the EMC/TAF shall provide data for the live battalions under training and the ECC/TAF shall provide a combined brigade-level history for selected live and simulated units.

3.1.1 The CBS Function - The CBS function shall meet the following functional requirements:

- Provide a real time, free play, two-sided computer simulation of a tactical engagement between a BLUEFOR armored or mechanized infantry brigade and an OPFOR motorized rifle division, including the higher echelon context of that engagement.
- Provide a simulation which supports the training of two battalion command staffs and the associated brigade command staff in a Command Post Exercise (CPX), in coordination with up to two live battalion Engagement Simulation (ES) field exercises with sufficient free play flexibility to support NTC battalion level experiential training.
- Fully utilize and remain compatible with the overall NTC training concept in the areas of hardware, software, personnel, and procedures.
- Realistically represent the integrated battlefield environment by simulating the air/land battle; electronic warfare; and combined conventional, nuclear, and chemical warfare.
- Provide the design flexibility to accommodate anticipated future weapon systems, tactics, doctrine, and threats.
- Provide the means to create and manage engagement scenarios and simulations via data bases and simulation control parameters.

- Allow the means to reconfigure the simulation to either accommodate additional notional elements or include elements as real participants in the field exercise.
- Utilize the same algorithms in both the model and ES software whenever modeling is required to support the live battalion (i.e., nuclear/chemical processing) in order to provide consistency of events to the brigade.
- Provide the means to support the training of CBS controllers and role players in an automated self-paced manner.
- Provide a common man-machine interactive display and control interface concept with that employed at the NTC to support EMC/TAP in order to facilitate training of the NTC operational staff and the functional commonality of controller stations.
- Provide the means to role play all significant Command, Control, Communications, and Intelligence (C3I) interactions between BLUEFOR company role players and battalion command/staff, and between division role players and brigade command/staff elements.
- Provide the design flexibility to support the inclusion of automated C3I interfaces between BLUEFOR company and battalion command groups and division and brigade command groups when; and if, such capabilities become part of the operational tactical inventory.
- Provide the means to incorporate the play of adjacent and attached (e.g., Direct Support (DS) and General Support (GS) units.)
- Provide required data to the brigade level ECC/TAP history in order to develop an NTC history which includes information on live and notional units for exercise control and training feedback.

3.1.2 The ECC/TAP Function - The ECC/TAP function shall meet the following functional requirements:

- Provide the means to collect, record and display all data required to: support monitoring and control of the combined ES and command post exercise; control the CBS battle simulation model; support role playing; and prepare/present C3I After Action Reviews (AARs).

- Provide the capability of creating a brigade engagement history which contains data from both the live and simulated battalions in a format compatible with a standard NTC training history database.
- Provide all interactive data display and input/output control capabilities required for operators to monitor and control the brigade and battalion command post exercises.
- Utilize the brigade history to control and monitor the entire brigade exercise (both live and simulated) and provide the brigade's command/staff with data (role played interface) from a single, coordinated battle rather than two separate, possibly overlayed, battles.
- Allow random access and accelerated time reviews and replay of each exercise segment in the brigade history.
- Provide the means to role play all significant C3I interactions between BLUEFOR division role players and brigade command staff elements being exercised, including:
 - DS and GS units
 - Air Defense Artillery (ADA)
 - Electronic Warfare (EW)
 - Nuclear and Chemical Warfare
 - Engineering
 - Aviation
- Provide the design flexibility to support the inclusion of automated C3I data interfaces between BLUEFOR division and brigade command groups when; and if, they become part of the operational tactical inventory.
- Provide the capability of creating and editing a command file for use during an AAR for brigade and command posts (which includes the actions of live and simulated units) during an ongoing exercise segment (i.e., in near real time).

- Provide the means of preparing, reviewing and presenting automated AARs with a manual override capability.
- Provide a common man-machine interactive display and control interface concept with that employed by the NTC to support EMC/TAF in order to facilitate training of the NTC operations group staff.
- Provide the full spectrum of unit history data base replay and review capabilities available in the EMC/TAF functions.
- Provide additional alphanumeric and graphics reports and displays over those currently available as needed to conduct meaningful brigade and battalion CPX AARs.

3.1.3 The EMC/TAF function - The EMC/TAF function shall meet all requirements documented in the Requirements Design Specification for the NTC CIS 500 Player system (NTC-1221-18, dated 24 May 1982), including the following:

- Receive, store, process, and transmit digital data as required to support NTC ES requirements.
- Record, correlate, process, and display engagement simulation events for direct fire weapons.
- Record and display positional information specified weapons, mounted units, and dismounted ground units.
- Receive and process data to assess and display, in near real time, the tactical operational status of all major weapon systems and units in the maneuver (engagement simulation) area; to include providing hardcopy of engagement statistics aggregated by players and units.
- Process Spectrum Analysis Component (SAC) and Goldstone data to assure that instrumented and selected key noninstrumented players do not transmit while in areas where they may interfere with current Goldstone operations.
- Receive and process data to evaluate weapon systems and maneuver unit performance; for use in preparing AARs and remedial take-home packages for maneuver unit commanders and staffs.

- Process data in real time to assess the operational status of field instrumentation and weapons engagement subsystems from initialization through termination of the exercise tasks.
- Calculate, record, and display to CIS operational personnel the data needed to direct field controllers in real time casualty/damage assessments for conventional indirect fire engagement simulations.
- Record and display positional information on helicopter and high performance aircraft operating in the Ft. Irwin engagement area.
- Accommodate a total of 1023 players across all histories with the limitation of 400 players and 75 units per history.
- Be capable of receiving and processing data to assess and display, in near real time, helicopter and high performance aircraft operating in the NTC engagement area.
- Be capable of receiving and processing data to assess and display, in near real time, the tactical operational status of major weapons systems (both real and simulated) and units in the live fire areas to include support for providing hardcopy of engagements aggregated by players and units.
- Be capable of calculating, recording, displaying, and transmitting to controllers real time casualty/damage assessments for mine, nuclear and chemical engagement simulations.
- Be capable of recording, correlating, processing, and displaying engagement simulation events for close air support and air defense weapons.

3.2 DETAILED FUNCTIONAL REQUIREMENTS FOR CBS

3.2.1 Introduction - The design goal of the Command Battle Simulation (CBS) model is to provide a solution to the effective integrated battlefield experiential training for brigade and battalion field commanders and their staff officers. CBS can be used to provide the experiential command and control foundation needed for the battalion/brigade command groups to intuitively function as a coordinated and effective team in the rapidly changing, high stress and ambiguous environment of real combat in the integrated battlefield.

The tactical engagement simulation math model lies at the heart of the CBS system. This model shall provide a closed loop process which calculates outcomes and displays those outcomes to the controllers as messages on the alphanumeric support display devices and as full color military graphic symbology (overlying a full color military map) on color graphic monitors. Specific processing performed by the CBS model shall include:

- Model Initialization and Control
- Battle Simulation
- Battle Simulation Data Logging
- Interactive Display and Control

3.2.2 The Model Initialization and Control Function - The Model Initialization and Control function shall perform all operations necessary to prepare the CBS system for real time operation. Major subfunctions performed by this function shall include data base management, scenario data base preparation, data base update and simulation control. These subfunctions are described in subsequent paragraphs.

Figure 57 defines the subfunctions performed by the Model Initialization and Control function, as well as all significant functional interactions among these subfunctions and between them and external functions. In this figure, the upper left hand diagonal element includes all external functions with which the Model Initialization and Control function interfaces. The remaining diagonal elements are the major subfunctions within the Model Initialization and Control function. Entries within each diagonal element define the next level of detail of functions performed by that function. Entries in off-diagonal elements define the functional interactions between the two diagonal functions forming the off-diagonal element. Off-diagonal entries in a row (either to the right or left of the diagonal element) are functional outputs from the corresponding function on the diagonal. Off-diagonal entries in a column (either above or below the diagonal element) are functional inputs to the corresponding function on the diagonal. Therefore, an off-diagonal entry defines the functional input/output relationship between the corresponding functions on the diagonal.

3.2.2.1 Data Base Management - A capability shall be provided for performing all file management operations, including data entry, formatting, and validation. The subfunction shall also control the sequence of operation of the various modules in the simulation. In addition, the

[illegible]

Figure 57. Model initialization and control functions.

Line Of Sight (LOS) and Cross Country Mobility (CCM) terrain data base files shall be generated in order to support battle simulation.

The LOS file shall contain elevations (in meters) and vegetation classes and shall be used to compute intervisibility. The CCM file shall contain the data required to compute rate of movement for vehicles or personnel over a special type of terrain and vectors which represent the direction of various classes of Lines of Communication (LOC) data. The LOC data shall be used to model on-road vehicle and personnel movements.

3.2.2.2 Scenario Data Base Preparation - An interactive scenario data base preparation capability shall be provided which will assist the controller in creating CBS scenario data bases. A maximum of ten scenarios shall be defined at any one time. Each scenario shall consist of four files: a card image scenario file, a binary scenario file, a prescheduled event file and a preplanned mission file.

A prescheduled event processing capability shall be provided which allows the operator to enter events and capture them for use as a prescheduled event. These events shall be created from new command and control events or can be reclaimed from previous prescheduled events, or from previously saved exercise command and control. These events will then be merged into a new or existing prescheduled event file in an automated manner. This file will then be available for any exercise and will be activated at the time specified in the event. Model time shall be the only thing which can activate prescheduled events.

A preplanned mission capability shall also be provided which allows the operator to enter events prior to the exercise and capture them for use under a single, specific mission name as a preplanned mission. These events shall be reclaimed from previous preplanned missions or from previously saved exercise command and control. These preplanned missions shall then be merged into a new or existing preplanned mission file in an automated manner. The preplanned mission names shall be entered automatically into the scenario data base. These packages shall be activated through interactive menu selection.

3.2.2.3 Data Base Update - A capability shall be provided which allows controller to modify model data which can not be modified through the interactive initialization process (e.g., unit position, amount of equipment, personnel and ammunition in a unit, and minefield locations). This shall be accomplished by allowing the operator to edit the scenario's Namelist file, a file which contains the simulation's runtime data. This capability will allow for

the use of a single data base while enabling minor changes to specific variables for a particular run. Controller inputs to modify the scenario data base shall be received from the Interactive Display and Control function.

3.2.2.4 Simulation Control - The controller shall be provided with simulation control commands which allow for initializing, reinitializing, restarting, replaying, freezing, or terminating a simulation.

Simulation initialization shall consist of reading the controller selected scenario data base and defining scenario parameters by initializing indicators, flags and variables with initial or default values. All command and control events, including any prescheduled events and preplanned missions, shall be processed. Then, any controller entered command and control made during initialization shall be read and executed. The controller will have previously modified the selected scenario to tailor it to the current exercise through the Scenario Data Base Preparation and Data Base Update subfunctions.

The controller shall also be provided with a capability to freeze an exercise or to replay an exercise. If this option is selected, processing shall be suspended until specified by the controller through a terminate freeze command. A reinitialization capability shall allow the controller to restart the current scenario or a different scenario.

A restart capability, which recovers the current exercise to a specified point and ignores all events which took place subsequent to that time, shall also be provided.

Data entered into the scenario data base shall be made available for review through replicate and replay capabilities. With replicate, a command and control scenario that was previously saved by the controller shall be rerun. The replay capability shall allow the controller to replay graphical (excluding alert messages) data from an exercise. The rate of the replay and the start time shall be controller selected.

A simulation shall be terminated by either controller selection or automatically when a controller-defined maximum simulation time is reached. Upon exercise termination, a final status report and casualty report, as well as any selected post exercise summary reports shall be available at the controllers selection.

To facilitate the flow of coordinated information to the brigade TOC, an algorithm shall be developed as part of the simulation control which permits the model to catch up

to real time if it should fall behind. This shall be done by maintaining the cumulative amount of time that the model is running ahead of or behind real time. During slack times where processing is faster than real time, the model shall be allowed to make, up the behind time. Conversely, if running faster than real time, the model shall mark time until the real time step is completed.

3.2.3 The Battle Simulation Function - The Battle Simulation function shall perform all operations necessary to simulate combat between BLUEFOR and OPFOR units from squad to brigade level. The following data base capabilities shall be provided to allow for this level of battle simulation:

- 250 defined units
- 200 defined control measures
- 200 defined minefields and obstacles
- 150 defined smoke missions
- 150 defined ammunition types
- 100 defined equipment types
- 30 pieces of equipment assigned per unit
- 30 types of ammunition assigned per unit
- 20 sensors

Special mission oriented units shall be created to simulate the air, engineer and convoy units which become available to the brigade/battalions upon request of the controller. Air units shall be created as a result of the operator defining an air mission, convoy units shall be created as a result of the operator defining a supply mission, and engineer units shall be created upon request of an engineering mission in which a division level unit which is not part of the exercise simulation is used. A maximum of ten air missions, ten engineering missions and ten convoy missions shall be defined at any one time.

Major subfunctions performed by the Battle Simulation function, as described in subsequent paragraphs, shall include Unit Engagements and Operations, Target Acquisition, Fire and Weapon Effects, Combat Unit Movement, Combat Support/Combat Service Support, and Battle Environment.

Figure 58 depicts the subfunctions performed by the Battle Simulation function, as well as all significant functional interactions among these subfunctions and between these subfunctions and external functions. In this figure, the upper left hand diagonal element includes all external functions with which the Battle Simulation function interfaces. The remaining diagonal elements are the major subfunctions within the Battle Simulation function. Entries within each diagonal element define the next level of detail of functions performed by that function. Entries in off-diagonal elements define the functional interfaces between the functions on the diagonal forming the off-diagonal element. Off-diagonal entries in a row (either to the right or to the left of the diagonal element) are functional outputs from the corresponding function on the diagonal. Off-diagonal entries in a column (either above or below the diagonal element) are functional inputs to the corresponding function on the diagonal. Therefore, an off-diagonal entry defines the functional input/output relationship between the corresponding functions of the diagonal.

3.2.3.1 Unit Engagements and Operations - The Unit Engagements and Operations subfunction shall perform the following processing:

- Unit Activations/Deactivations
- Calculation of Operational States
- Unit Engagement/Disengagement Processing
- Interactive Request Processing
- Unit Radiation/Contamination Status Calculations

3.2.3.1.1 Unit Activations/Deactivations - Operators shall be provided with interactive control for the selection of units to participate in the simulation through the Interactive Display and Control function. Unit deactivation commands shall be available at anytime in the simulation, but the controller shall be restricted to one activation command per force per simulation minute. Multiple units shall, however, be selectable in a single command.

The model shall automatically deactivate any unit for which personnel and equipment levels have fallen below a controller defined operational threshold. The model shall also automatically activate all mission oriented units which are created to simulate air, engineering and convoy units. These units shall be created as a result of the operator defining an air, engineering or resupply mission via

[illegible]

Figure 58. Battle simulation functions.

interactive menu. (NOTE: special units shall only be created for engineering units which are requested from division level and which are not defined in the scenario data base).

If a unit is deactivated, either as a result of controller command or by simulation logic, that unit shall not be available for reactivation. Also, any control measures associated with a deactivated unit shall be deleted.

3.2.3.1.2 Assignment of Operational State - Each unit's operation type, intent, resources and battlefield actions shall be considered in calculating the operational state of a unit. A unit's state shall change as a result of time, unit location, protective posture, distance from enemy units, distance from the Forward Edge of the Battle Area (FEBA), FEBA location, degree of suppression, personnel and equipment level, force ratio, relative position of units, engagements, and support fire. The operational state of a unit shall be used by other subfunctions (i.e., Target Acquisition, Fire and Weapon Effects and Unit Movement) for processing their tasks.

The intent of each unit (i.e., avoid engagements, engage as necessary or seek engagements) and the unit's operation type (i.e., hasty defense, deliberate defense, deliberate ambush, delay, withdraw, reconnaissance, recon/force, movement to contact, attack, displacing and attack/pursuit) shall be specified by the operator based upon the scenario's mission assignment provided by the division role player. The unit's movement mode (i.e., mounted or dismounted) and the unit's protective posture shall also be specified.

For air missions, the controller shall specify the operational mode of an air unit for each point of an air route. This mode shall set the default values displayed for speed and altitude; however, the default shall be changeable by the controller. The operational mode value shall influence the unit's ability to be detected and the use of available sensors and weapons.

3.2.3.1.3 Unit Engagements/Disengagements - The model shall determine when units form and break off engagements, maintain engagements by mobilizing opposing units against one another, determine whether a unit shall be allowed to discharge direct fire weapons against an enemy unit and calculate engagement parameters. The most important factors regarding unit engagement shall be visual detection and distance from the opposing unit. Other considerations shall include maneuver control status, unit intent and unit movement mode. Engagements shall only occur between enemy

units; engagements between friendly units shall not be allowed by the model.

During the simulation, a ground unit shall be moved toward its desired destination in discrete segments (as described in the Unit Movement subfunction). Each movement step shall be followed by a check to determine whether the unit has come close enough to an enemy unit to initiate an engagement. Before any engagement can be initiated, visual detection (as determined by the Target Acquisition and Intelligence subfunction) must be established between the two units. Engagement initiation shall never occur between unseen targets.

Each unit shall have a characteristic input data engagement range, determined by unit type and side, which specifies the distance at which the unit may initiate an engagement. Another range, which is predefined by input data and is based on unit type, shall specify the range at which the unit must initiate an engagement with an enemy unit.

If an engagement can (or must) be established, the unit shall be instructed to move directly toward the nearest enemy unit. Upon arrival at the enemy's location, the unit shall be instructed to form a new engagement if the closest enemy unit is not already engaged, or to join the engagement of the enemy unit if the enemy unit is already involved in a confrontation.

The eventual withdrawal of the unit from the engagement shall also be handled by the model. This withdrawal shall cause the unit to change its operational state and manner of movement.

3.2.3.1.4 Interactive Request Processing - Data entered via the Interactive Display and Control function shall be processed such that the CBS controllers can affect the operation of the model. The controller shall have the capability of entering information such as maneuver commands, firing events, air missions, intelligence reports, unit resource allocations, control measures and obstacles.

Command and control communications with a unit via interactive menu shall be temporarily lost when that unit's command post is destroyed. In this event, all command and control for the units controlled by the devastated command post shall be ignored for a specified time (in minutes). This communication loss shall occur only once per unit during the simulation.

All of the interactive command and control entered into the simulation shall be activated at a time specified by the controller. The events shall be scheduled to occur either immediately or at some time in the future. Prescheduled events and preplanned missions shall also be executed at the time specified.

3.2.3.1.5 Unit Radiation/Contamination Status - The model shall maintain each unit's radiation and contamination level in the event of nuclear and/or chemical attack.

A unit's radiation level shall be calculated based upon radiation from both prompt nuclear effects and fallout. Radiation patterns shall be calculated by the Battle Environment function. A unit's radiation status shall be affected by decontamination such that the unit shall not; continue to accumulate radiation at as high a rate. The unit's basic radiation dose shall not, however, be decreased as a result of decontamination.

A unit's chemical contamination level shall also be calculated and maintained by the model. This contamination level shall be affected by the characteristics of the contaminated area being traversed by the unit and by the protective posture of the unit. The unit's contamination level shall be zeroed as a result of undergoing decontamination procedures.

A unit's radiation and contamination levels shall affect a unit's rate of movement (refer to the description of the Unit Movement subfunction) and shall result in personnel casualties (refer to the description of the Fire and Weapon Effects subfunction). The immediate blast effects shall also cause equipment damage.

3.2.3.2 Target Acquisition and Intelligence - The initial and updated allocation of intelligence assets to each unit shall be defined through the scenario data base and interactive controller update. The model shall provide a capability for units to detect opposing units through visual, aural, radar, and sensor means using the intelligence available to the units. Ground detections, air-to-ground detections, and ground-to-air detections shall all be considered. Intelligence reports shall be generated based upon unit detections and controller defined prescheduled events.

3.2.3.2.1 Allocation of Intelligence Assets - The model shall provide the means to allocate intelligence gathering assets which are organic to division, to subordinate units at the beginning of the exercise. Controllers shall also be provided with a capability for real time interactive reallocation of intelligence assets (based on direction of

appropriate role players) through the Interactive Display and Control function.

The types of assets to be modeled shall include; as a minimum, Ground Surveillance Radar (GSR), Remote Sensors (REMs), night vision devices, airborne sensors, and human intelligence (i.e., visual and/or aural detections). The division may send scenario-based intelligence reports from corps which originate from such sources as signal intelligence, photographic intelligence, reconnaissance, general aviation, and prisoners of war.

3.2.3.2.2 Unit Detection Processing - The model shall determine the probability of visual detection, radar detection, aural detection, and detection by remote sensor fields between ground units and shall generate an alert when a detection is made. The model shall also determine whether ground units can visually detect enemy air units and whether air units can detect ground units with the sensors available to them.

Visual detections shall be calculated between units based upon the distance between the units and the terrain. The range used for visual detection purposes shall be from one unit's center of mass to the other unit's center of mass. An observer unit may be equipped with visual detection aids (e.g., binoculars and night vision devices). The probability of detection by each of these devices shall be calculated and shall be used to determine an overall cumulative probability of visual detection. The use of these special devices shall be modeled such that they are only used at proper times of the day. Therefore, binoculars shall not be modeled as being used at night and night vision devices shall not be used in the daylight.

The model shall also calculate the probability of aural detections between ground units. Air units shall be excluded from aural detections. The model shall calculate the sound produced by a ground unit according to whether the unit is stationary or moving and the type of equipment which is contained in the unit. If two or more pieces of equipment are generating noise at the same time the effective sound pressure shall be increased. The sound losses between two points due to spherical spreading and vegetation absorption shall be determined by the model. In addition, the background noise in the neighborhood of each point shall be calculated. Background noise shall be calculated by looking at the basic background noise level of the vegetation class where the observer is located. This noise level shall be modified by a controller specified wind correction factor, wind velocity, and a controller specified rain noise factor. This value shall then be combined with the source noise from the observer's own unit to determine

the actual background noise level which will affect the unit's ability to aurally detect another unit. Any unit which is firing; however, shall be assumed to be aurally detected by any other unit within range.

The probability of a given observer unit detecting another unit with GSRs shall be calculated, based upon the following factors:

- the number and type of GSRs present in the observing unit,
- the range of the GSRs,
- terrain concealment and vegetation classes,
- the time an observer unit has been in one place, and
- the suppression level of the observer unit.

In order to model the setup time required for GSRs, the equipment shall only be used by a stationary observer unit. A unit under heavy suppression shall also be excluded from the use of GSRs. In order to model the correct operation of GSRs, line of sight must exist between the observer and target units. The target unit shall be within range of the GSR and neither observer nor target unit may be located in a dense vegetation class.

The model shall also calculate whether or not a given unit can be detected by an existing remote sensor field. Only passive sensor fields shall be modeled and these fields shall not be dynamically altered during the exercise. Any unit within the boundaries of the sensor field shall be detected. Two maximum ranges (one for vehicles and one for foot troops) shall be defined for each sensor. A maximum of ten blue and ten red sensor fields shall be modeled at any one time.

The model shall provide air-to-ground and ground-to-air detections. Air-to-air detections shall not be modeled. The model shall utilize a horizon-checking capability which shall provide 360 degree coverage, based upon the maximum range of air defense weapons in the unit. An alert shall be generated the first time that an air unit is detected by each enemy ground unit throughout the air mission. An air unit may detect a ground unit through the use of the airborne sensors carried by the air unit. The probability of air-to-ground detections shall be calculated separately for each sensor type as a function of the range, altitude, and air speed of the sensor; look angle; rate of movement

of the ground unit; and the number of sensors in the air unit. An air unit shall always be able to locate its assigned ground target. For SLARs, the ground unit must have vehicles which conform to the minimum and maximum SLAR ranges.

The model shall generate an alert message whenever a unit is detected by another unit.

3.2.3.2.3 Target Nominations - Based upon the results of unit detection processing, a list of potential enemy targets for each unit shall be provided to the Fire and Weapon Effects subfunction for further processing.

The fraction of the target that is visually detected shall be calculated and used to determine the allocation of fire to targets. A unit's target value shall be reduced by the fraction of the unit that has been detected such that fire shall not be allocated if a large enough percentage of target has not been detected.

3.2.3.2.4 Generation of Intelligence Reports - The prescheduled event capability shall be used to provide a semiautomated intelligence reporting capability. Prior to the start of the scenario, the controller shall be allowed to enter intelligence alerts from division which shall be replayed at controller specified times in the scenario. These alerts will be based on the exercise scenario and will be used to simulate intelligence reporting to the brigade.

Detection alerts, based on unit locations and the allocation and placement of intelligence gathering assets (i.e., sensors) shall be automatically generated by the model.

3.2.3.3 Fire and Weapon Effects - All direct fire, indirect fire, support fire, air mission, air defense, and nuclear and chemical events shall be processed by the model. Weapon effects, including personnel casualties, equipment and terrain/infrastructure damage, contamination, and suppression shall be calculated.

3.2.3.3.1 Direct and Indirect Fire Processing - Direct and indirect fire shall be allocated against enemy targets in response to either controller issued fire commands or through automatic direct fire allocation algorithms. Direct fire requests shall be one of four types 1) a percent of fire firing command, 2) a rounds per minute firing command, 3) a cease fire command or 4) a cancel fire mission command. Each fire event request shall be checked by the model to ensure that none of the following conditions exist:

- Range exceeds maximum unit type firing range
- A friendly unit is in the line of fire
- The target unit is not eligible for direct fire
- The firing unit is not eligible for direct fire
- FEBA range exceeded
- The firing unit is not manned
- The firing and target units have no visual detection
- The maximum range of the weapon was exceeded

An interactor alert shall be generated if a requested event must be rejected.

Automatic fire allocation shall occur based upon the detection of enemy units that are within range of the unit's weapons. This fire allocation shall result in 100% of the weapons of a given type being allocated against eligible targets, based upon the operational state in which the unit is operating.

Weapon fire from firing units to target units shall be allocated only when the following conditions are met:

- the target unit was detected by the firing unit,
- the target unit lies within the effective firing range for the specific weapon being considered,
- a friendly unit does not lie between the firing and target units, or
- the target unit contains some amount of target value from either primary or secondary target elements.

A firing unit shall attempt to allocate its weapons when multiple target units are available in a manner proportional to the detected target value contained in each target unit. Individual weapons shall not be fired against individual target elements; instead the firing shall have effects against all elements in the target unit. A single range value shall be assumed between two opposing units for the purpose of calculating fire effects.

Ammunition levels for units shall be updated as a result of the allocation of rounds fired and reported to the Combat Support/Combat Service Support function.

3.2.3.3.2 Support Fire Processing - Support fire shall be allocated against enemy targets only in response to controller-issued fire commands. All units which contain support fire weapons shall initially be placed in a nonfiring operational state. This shall inhibit any support fire weapon from firing unless overridden by a controller-entered fire command. In this manner, a support fire weapon shall not be fired unless specifically requested by the controller.

Support fire shall be allocated against a unit or a particular XY location. Support fire against opposing target units shall be directed at the center of the unit.

Support fire requests shall be checked to ensure that the requested support fire weapons exist in the unit, that the target is within the maximum effective range of the firing unit, and that the firing unit has not been suppressed to a level where the unit can not fire the mission.

Ammunition levels shall be reduced, and movement and personnel vulnerability classes shall be updated as a function of the allocation of support fire.

3.2.3.3.3 Air Mission Processing - The BLUEFOR aviation assets normally employed in support of a battalion, including utility helicopters, observation helicopters, helicopter gunships, cargo helicopters, and close air support Air Force aircraft shall be modeled. These air assets shall be organized into air units for simulation. The following eight types of air ordnance shall be modeled: low drag bomb, high drag bomb, guided weapons, 2.75 rockets, cannons, cluster bombs, rocket, and napalm. Each air unit shall be modeled as a single entity and may consist of one or more aircraft of the same type flying in a single formation. The system shall have the capacity to simulate ten air units simultaneously.

The mission assignment shall be defined by the controller through an interactive menu capability. The controller shall have the capability to specify the following parameters:

- Mission type
- Flight route

- Number of aircraft
- Type of aircraft
- Modes of flight
- Types of equipment
- Target units or points
- Mission call sign
- Weapons or sensor load

Mission types for Army aircraft shall include reconnaissance, air strike, and troop and supply air lift. Mission types for Air Force aircraft shall include close air support and reconnaissance. If the mission type is reconnaissance surveillance, only air sensors shall be selectable for the aircraft load. If the mission type is air strike, the aircraft load shall only be composed of air ordnances (individually selected or by standard load). The controller shall specify whether Electronic Counter Measure (ECM) is included as part of a reconnaissance or air strike unit. The reduction in acquisition probability due to ECM shall be defined in the data base.

If the aircraft has a built-in weapon and air ordnance is selected from the air menu, the number of drops shall be set so that "point done" is possible. When the event is processed, the number of drops shall be set equal to the rounds per pass defined in the data base for the aircraft.

Flight routes shall be specified as a series of legs. The system shall provide for a maximum of nine legs per flight route. Each leg shall have a specified mode of operation. Modes of flight shall include cruise observation, Nap of the Earth (NOE), weapon delivery, radar avoidance and hover/orbit. The NOE mode shall be designed for use by simulated helicopters. The radar avoidance mode shall be designed for use by Air Force aircraft. The capability shall be provided to specify enroute pickup points, landing zones, weapon delivery points, and orbit points in the flight route. A capability shall be provided to specify the following characteristics for a route:

1. PICKUP POINT. A pickup point on the route shall represent the location where helicopters pick up a cargo of men, equipment and/or supplies. The controller shall designate the cargo. Cargo shall be picked up by an air unit only if the cargo is located at the pickup point. Suitability of the

number and type of aircraft for the cargo shall be the responsibility of the controller. Pickup points shall apply only to helicopters. Departure from the pickup point shall occur based upon either a user specified variable representing loading time, or upon command of the controller. Units, equipment, and supplies designated as cargo shall move with the air unit and shall be assessed casualties as a result of any actions involving the air unit. Alert messages shall be sent to all involved controllers when the air unit is again airborne. Endurance time shall be decremented while the aircraft are on the ground at a pickup or drop point.

2. LANDING ZONE. Landing zones shall be used to represent the off-loading location for cargo and troops and shall apply only to helicopters. Off-loading shall be complete following the expiration of a user specified variable used to represent off-loading time. Upon completion of off-loading, all cargo shall be available for normal ground simulation. All involved controllers shall be notified when off-loading has been completed via an alert message. The air unit shall take off on the next route leg upon completion of off-loading or upon controller command. Landing zones shall also be used for air units not carrying cargo. Such aircraft shall be available for take-off at any time.
3. ORBIT POINT. An orbit point shall represent an aerial holding point for an air unit. The flight shall depart the orbit point at a specified time or on command from the controller.
4. WEAPONS DELIVERY POINT. Weapons delivery points shall be used to direct and control the fires of armed aircraft. For armed helicopters, the weapons delivery point shall be an altitude. Ordnance shall also be delivered from any mode allowed in the data base. Aircraft at a weapons delivery point shall be considered by the model to be making maximum use of cover and concealment consistent with target detection and engagement tactics and air ordnance parameters. The controller shall have the capability to direct the fires of the aircraft against specific targets. Engagements and impacting weapons shall be graphically displayed. Alert messages shall be sent to the controller to indicate weapon firing or losses due to hostile action. Ordnance consumption shall also be modeled. Exhaustion of ordnance on board shall

cause the air unit to cease firing and shall cause an alert message to be sent to the controller.

When air units are ready to deliver a guided weapon, the target shall be checked to determine whether it is covered by smoke or local ground fog. The ordnance shall not be released if the target is obscured, and an alert shall be sent notifying the originating controller that the ordnance was not delivered. Bomb damage assessment shall be computed utilizing the same method as for ground fire engagement, and effects functions shall be used to determine casualties.

The model shall determine whether the proposed flight route can be accomplished within the flight duration of the aircraft. If it can not be accomplished, the controller shall be notified by an alert. If the route is feasible, the controller shall be provided the capability of entering a start time or placing the flight in a start-on-command status.

At a data base specified time before the mission start time, the model shall determine whether sufficient air units are available to execute the mission. If ten air units are already active, an alert shall be sent to the controller who initiated the mission. If sufficient air units are available to execute the mission, a message shall be displayed which indicates that the mission will be executed as planned. At the specified start time, the simulation of the movement along the specified flight route shall begin. Delay times associated with take-off and landing shall also be modeled. A message shall be sent to the controller to indicate that the air unit has been activated.

Simulated air units shall move between route points as determined by the specification of the flight route and certain performance parameters (i.e., the altitude and speed for each aircraft type operating in one of the following modes: cruise/observation mode, weapons delivery mode, hover/orbit mode, NOE mode, and radar avoidance mode). Changes of altitude and speed shall be accomplished at the beginning of a new leg. All altitudes shall be considered to be height above terrain.

Three conditions (i.e., controller intervention, fuel exhaustion and enemy air defense action) shall cause modification of a flight route during its execution. The controller shall have the capability to interactively redefine the remaining portion of an active route. If the new route does not lie within the time remaining for the air unit, an alert message shall be sent to the controller. If

an air unit has been allowed to proceed to a point where it has exceeded its endurance time, the mission shall be terminated and all aircraft of the air unit shall return to their start point. While in flight, endurance time shall be monitored by the model. If the unit reaches a level where there is not sufficient time for a return to base, an alert shall be sent to the controller. Alerts shall be forced to the controller when endurance time reaches a user specified series of times as well. If an air unit receives fire from an enemy unit, an alert message shall be sent to the controller.

Delay times associated with take-off and landing shall also be modeled. The controller shall specify whether ECM is included as part of a reconnaissance or air strike unit. The reduction in acquisition probability due to ECM shall be defined in the data base. The simulation shall not model maximum altitude, maximum speed, or minimum speed.

For strike missions, visibility conditions shall be checked to ensure that conditions are appropriate. The model shall also check to ensure that the ordnance was specified for a strike, that the specified ordnance is appropriate for the target, and that minimum and maximum release altitudes and speeds for the weapon are appropriate. If the mission is a standoff strike, the model shall ensure that guided weapons are available and that the distance between the standoff point and the target is within the range of the guided weapon. Ambient light level and vegetation height shall be checked for guided weapons to ensure that the target is visible.

3.2.3.3.4 Air Defense Processing - The model shall simulate air defense actions of both friendly and opposing forces. All units that have an air defense weapon shall have an inherent capability to engage overflying aircraft. Controllers shall be provided the capability of changing the status of air defense alert of all units.

Engagement of an aircraft by a ground unit shall be determined by the weapons control status in effect, the identification mode of the flight, and the actions of the flight. Weapons control status shall take on one of three values: weapons tight, weapons hold or no fire. Weapons tight shall indicate that all enemy aircraft who are within range and otherwise eligible for air defense fire should be fired at. Weapons hold shall indicate that only enemy aircraft which are attacking a specific unit should be fired at. No fire shall indicate that air defense weapons should be fired under no circumstances. Weapons free status will not be modeled.

The system shall be capable of simulating the movement and positioning of air defense units in the same manner as for other ground units. Air defense weapon systems shall have the following controller specified variable associated with them for the purposes of air defense simulation:

- Maximum detection range
- Maximum horizontal engagement range
- Maximum engagement altitude
- Minimum engagement altitude
- Minimum horizontal engagement range
- Probability of acquiring
- Rate of fire (i.e., normal or salvo)
- Probability of kill per round
- Maximum detection range under enemy electronic warfare
- Angular width of sector
- Time to emplace
- ECM degradation factor

The center of each sector shall be assumed to be the direction the unit is facing. If more than one air unit is eligible for engagement at the same time, multiple engagements shall be initiated up to the number of weapon systems assigned to the air defense unit. Any aircraft that enters the appropriate detection range within line of sight of the air defense unit shall be detected and an identity determination shall be made. An appropriate number of horizon checks (as a function of sector width) shall be made to determine line of sight. If the aircraft remains inside the detection range, acquisition shall occur probabilistically. (Engagement air space shall be bounded by the maximum and minimum engagement range, the horizon, the maximum and minimum engagement altitude, and by the sector width about the specified center of sector heading.) Once acquisition has been achieved and the rules of engagement are satisfied, firing shall commence as soon as the aircraft enters the air engagement space.

Air defense weapons shall fire at the appropriate parametric rate until one of the following events occurs:

- The air unit leaves the engagement air space
- The number of aircraft in the air unit is reduced to zero
- The air defense weapons are destroyed by enemy weapon effects or are suppressed to the extent that they cannot fire
- All on hand ammunition is expended
- Aircraft identification or weapon control status changes such that the engagement is no longer appropriate

Resupply of air defense units shall be accomplished by controller action as part of the Combat Support/Combat Service Support function.

If a target air unit is designated as employing ECM, the probability of kill shall be degraded by the ECM degradation factor. Alert messages indicating detection, engagement, and end of engagement shall be provided. Weapons control status shall be available upon request.

3.2.3.3.5 Nuclear and Chemical Processing - The immediate and delayed effects of nuclear and chemical warfare shall be computed by the same nuclear effects and chemical models that will be implemented for the 500 player CIS system. Nuclear events shall be coordinated such that if a nuclear event occurs in the ES exercise the event shall also occur in the model. In this manner, the simulated units will be participating under the same environment as the live battalion.

Nuclear radiation data shall be maintained by unit for each simulated battalion as a function of time and location. The posture of a unit shall be determined by the model based upon the type of equipment contained in the unit.

A display shall be provided which depicts ground zero, blast, and yield and the maximum lethal radii for each of the following target types: tanks, APCs, and troops in the open.

Accumulated radiation level statistics shall be maintained by unit. These accumulated doses shall be calculated based upon the relationship of the unit's location to ground zero. Radiation contours shall be

available for display in order to depict the actual environment for the controllers.

Unit performance shall be degraded due to nuclear radiation effects and units shall be delayed while they are undergoing decontamination procedures.

A chemical event shall be defined through interactive menu and the model shall calculate the contaminated area caused by the event. The model shall consider weather and terrain when calculating the contaminated area. The boundaries of the contaminated area shall change as a function of time and weather. A display shall be provided which shows the chemically contaminated area. Unit performance shall be degraded based on Mission Oriented Protective Posture (MOPP) level and units shall be delayed while they are being decontaminated.

3.2.3.3.5.1 Suppression - The model shall calculate the fraction of each unit that will be treated as suppressed in unit firing and movement calculations. The following criteria shall affect a unit's level of suppression:

- the number of direct fire rounds per unit width
- the number of support fire rounds per square meter
- the number of area fire rounds per square meters, and
- the number of personnel in the previous time step relative to personnel at the beginning of the last time step.

Unit suppression shall result when rounds land in a unit area or when personnel are lost. Suppression effects shall result in having personnel in a unit less vulnerable to enemy fire, a unit not firing from the percentage of weapons which are considered suppressed, and reducing an equipment's movement rate proportional to the percentage of the suppressed equipment.

3.2.3.3.5.2 Casualty/Damage Assessment - The model shall assess personnel and equipment casualties which result from weapons in a firing unit firing a computed number of rounds against a single target unit. The weapons may be direct fire, indirect fire or support (e.g., division artillery howitzers). The model shall indicate the number of personnel and equipment casualties for each vulnerability class and each equipment type in a target unit as a result of a weapon firing.

If support fire or an air delivered weapon impact point is within a database defined distance of a road or bridge, damage shall be assessed against the road or bridge.

Casualties shall be assessed for prompt nuclear effects based upon immediate radiation, shock wave/blast, peak overpressure, Electromagnetic Pulse (EMP), and thermal/optical radiation intensities. Terrain damage resulting from the blast shall be computed. Accumulated radiation level statistics shall be maintained by unit and casualties shall occur based upon the accumulated radiation levels of the units. A unit's personnel and equipment losses shall be calculated based upon the type of equipment and the assumed posture for the equipment type.

Casualties due to a nonpersistent chemical event shall be calculated based upon unit posture and unit personnel locations relative to the chemically contaminated area. No casualties shall be assessed among personnel who remain outside the boundary of the vapor/aerosol hazard area. The personnel inside the hazard area shall be at risk, the level of which shall be evaluated in terms of MOPP level, the time at which the MOPP posture was adopted relative to the time of the attack and the proximity to higher dosage level contours. For persistent chemical agents, casualty assessment will consider both the inhalation hazard and the contact hazard. Casualty assessment for the inhalation hazard shall be performed in the same manner as for nonpersistent agents. For the contact hazard, a time delay will be used, which will be a function of the MOPP level, and the actions taken by the unit to reduce the contact hazard. These actions consist of evacuation of the contaminated area, followed by decontamination of unit equipment and personnel. If these actions are not taken within a specified period of time, casualties will be assessed. Further delay will result in additional casualties.

An overall casualty accumulation shall be maintained for all equipment for both forces. For each firing weapon, the total number of personnel and the number of each individual type of equipment casualties which resulted from the firing of the weapon shall be accumulated and printed at the end of the exercise.

3.2.3.4 Unit Movement - The ground movement of combat units shall be simulated based upon environmental conditions and battlefield conditions. Man-made and terrain obstacles which cause degraded movement rates shall be modeled. In addition, movement profiles of air units and of Combat Support/Combat Service Support units shall be modeled.

3.2.3.4.1 Ground Combat Unit Movement - The model shall

move each unit in discrete intervals toward its destination and determine the direction to a unit's destination. A unit's location shall be updated based on the unit's current location, its movement code and data, and its movement rate. The rate of movement for each unit shall be computed based on the terrain the unit passes over. A terrain data base shall be accessed to determine the cross-country mobility rate of the terrain a unit is crossing. Elevation, terrain trafficability, and hydrography shall affect the rate at which a unit can traverse the terrain.

The model shall compute degradation factors which result from various environmental factors (i.e., terrain and weather) on unit movement rates. Weather conditions which affect a unit's movement rate shall include rain and fog. The model shall assume that the maximum operational speed of a self-propelled (vehicular) equipment type is attained on a firm, smooth, flat surface under optimum conditions. As conditions depart from the optimum, the maximum operational speed shall diminish by an amount proportional to the degree of departure from the optimum. Environmental features shall generally exert a retarding or degrading effect on equipment movement rates. This effect shall be quantified for each equipment type and used to degrade a unit's movement rate. The equipment type having the slowest speed shall control the rate at which a unit may move since unit movement cannot be faster than the slowest moving equipment type in the unit.

The degradation effect caused by limited visibility shall be determined by the ambient light level and meteorological visibility. The amount of degradation caused by ambient light level shall depend upon whether it is a day or night and the ambient light level relative to certain established lower and upper bounds of light level. Meteorological visibility shall degrade a unit's movement rate when visibility is less than 600 meters. If visibility is less than 100 meters, degradation shall be more severe.

The degradative effects of fatigue on dismounted units shall also be considered. The model shall assume that the fatigue is experienced by all dismounted personnel within a unit in a uniform fashion. When a unit is in MOPP gear, the fatigue factor shall be increased for the unit. The development of the fatigue factor shall take into account the total amount of energy expended since the start of the simulation. Fatigue shall generally be considered to be related to the total amount of energy (in British Thermal Units (BTUs)) expended by the body.

A unit which is engaged or being suppressed shall also have a degraded effect on a unit's movement rate. A unit's movement rate shall be degraded due to nuclear radiation

effects and units shall be delayed while they are undergoing decontamination procedures. The degree of movement degradation due to radiation effects shall be directly related to the radiation status of the unit (i.e., units with higher radiation dose shall be delayed longer than units with a lesser dose). A data base specified time delay shall be used for delaying a unit while undergoing decontamination procedures.

The CBS model shall contain logic which governs the positioning of opposing ground units during engagements and shall direct units toward the center of the greatest enemy threat. When an encounter causes an engagement, the forces involved shall change their directions of movement in order to directly approach each other with the intent of exchanging fire. During the course of unit movement, the model shall determine whether an engagement can be initiated as a result of enemy contact, as described in the discussion of the Unit Engagements and Operations function.

The model shall also check to ensure that units which have not detected each other do not pass through each other as a result of their movement to a new location.

When a unit arrives at its destination, the model shall update the unit's operational state and determine if there are any new orders for the unit (in the Unit Engagements and Operations function).

A capability shall be provided which allows the controller to form operational groupings of units through interactive menu selection. These operational groups shall then be maneuvered together, such that a maneuver command will result in the movement of each unit in the group toward the new destination. Once the group arrives at its destination the operational grouping shall be dissolved only by controller action.

3.2.3.4.2 Obstacle Breaching - The model shall determine if an obstacle (i.e., crater field, general mass, minefield, lake, waterway, concertina, fixed wall, ditch, ravine, cliff or terrain obstruction) is in the path of a unit's movement. Obstacles shall hinder the movement of the unit as it attempts to move from its current location to its updated location. If a unit would encounter an obstacle by moving to the next location, the new location for the unit shall be changed to be the edge of the encountered obstacle. The unit shall then halt at the edge of the obstacle. An obstacle encounter of any kind other than hydrography shall cause the unit to be delayed a minimum of three minutes. Additional delay time shall be added depending upon:

- the type of obstacle encountered,
- the distance to be traversed across the obstacle,
- the number of personnel within the unit available to help reduce or breach the obstacle, and
- the availability of engineering support.

Engineering support, as defined under the Combat Support/Combat Service Support function, shall be defined by the controller and shall result in a reduction in the delay time experienced by a unit which has encountered an obstacle.

When a unit is detained by a minefield, personnel casualties and/or damage to equipment shall be calculated. Minefields shall be the only modeled obstacles which may inflict damage and casualties. As a result of breaching a minefield, dismounted units shall suffer one personnel casualty. A mounted unit shall have the first self-propelled vehicle in its equipment list destroyed, and the unit shall also suffer the expected number of personnel casualties associated with destruction of the equipment.

3.2.3.4.3 Air Unit Movement - Movement profiles of air units shall be maintained such that the position of each air unit shall be updated graphically every fifteen seconds.

The controller shall define an air mission through the interactive menu capability and, as a result of this air mission, an air unit shall be created by the model. As part of the air mission definition process, the operator shall define each point of the air route and shall specify the speed and altitude for the unit at each route point.

The model shall provide a capability for orbiting a fixed wing aircraft or hovering a helicopter over an air route point. The controller shall specify the length of the hover or orbit.

3.2.3.4.4 Combat Support/Combat Service Support Unit Movement - Two types of combat support/combat service support units shall be modeled: convoy units and engineering units.

Convoy units shall be created in response to a controller specified resupply mission. The convoy unit shall only be a part of the simulation for the time it takes to move the supplies from one supply unit to another. Up to five convoy units shall be created at any one time.

The size of a convoy unit shall be a function of the controller specified mission. The width of the unit shall always remain the same; however, the length of the convoy shall be a function of the number of vehicles in the convoy.

The route of the convoy shall be specified by the controller and shall follow a main supply route, a route of march, or a special route. The model shall institute a standard delay time to load the convoy vehicles. This time shall be a function of the type of vehicles which need to be loaded. A delay time shall also be instituted by the model for unloading the equipment when it reaches its destination.

Those engineering units which are not normally a part of the exercise but are created for a special engineering assignment (i.e., loaned from division) shall be created in response to controller specified engineering missions. Once created, these units shall move to their destination in the same manner as other ground units. Upon arrival at their operator specified destination, they shall perform their defined engineering mission. Upon completion of their mission they shall be removed from the simulation.

3.2.3.5 Combat Support/Combat Service Support - The Combat Support/Combat Service Support subfunction shall maintain the current unit status of personnel, supplies and equipment. The resupply of units and equipment recovery and repair shall be modeled. The readiness condition of units shall also be computed and alerts shall be generated for marginal readiness conditions.

Engineering missions shall be defined to assist combat units in the construction and breaching of obstacles. Combat support/combat service support units shall also be responsible for decontaminating units which have been contaminated by chemicals or radiation.

3.2.3.5.1 Personnel Status - Personnel status shall be maintained for each individual combat and combat service support unit defined in the simulation. The initial personnel level for a unit shall be provided upon initialization. This value shall be decreased to reflect battlefield casualties. As part of the scenario data base, the number of personnel required to operate a piece of equipment shall be specified. This value shall be used to determine whether sufficient manning is available for the equipment.

The initial and current strength shall be specified for the categories of total personnel, officers, noncommissioned officers, and enlisted men. The personnel shall also be assigned to vulnerability classes (i.e., standing, prone, in a foxhole, and completely shielded). A personnel level

report shall be available which displays the current and authorized personnel levels of each personnel type and the number of personnel in each vulnerability class.

Personnel medical treatment, evacuation and replacement shall also be modeled. Personnel who are wounded but treatable shall be removed from a unit's resources for the amount of time specified by the operator in the scenario data base. This shall simulate the evacuation of wounded personnel to aid stations. Those wounded personnel who require evacuation shall be removed from a unit's resources. The time and resources required to evacuate the personnel shall also be specified by the controller in the data base. A time delay shall be computed to model the time required for replacements to reach the physical proximity of the unit.

3.2.3.5.2 Supply Status - The supply status of each unit shall be maintained for gasoline, diesel, ammunition, water and miscellaneous supplies. Initial allocations of the supplies shall be assigned at the beginning of an exercise. Supplies shall be decremented by the model in response to battlefield actions. Equipment movement shall result in a decrease in fuel and firings shall result in a decrease in ammunition. Water consumption shall be based on the number of personnel in a unit; the unit's level of activity shall not affect consumption. A consumption parameter shall, however, be provided in the data base so that different environments (i.e., desert versus forest) can be simulated.

The controller shall specify supply missions through an interactive menu. The operator shall specify all equipment which forms the convoy and the amount of supplies to load on that equipment shall be specified. Either ground or air convoys may be defined. The supplying unit shall have both the equipment and supplies which are requested for the convoy. The logistics mission shall be aborted if the operator requests more vehicles or supplies than are available. The model shall ensure that the weight of the supplies does not exceed the weight limit of the vehicles. The controller shall specify the weight of any miscellaneous supplies being carried. Value shall be provided in the data base for the weight of other supplies.

Supplies shall be sent initially from one supply unit to another supply unit. The redistribution of supplies from supply units to the front line shall also be performed through a separate interactive menu process.

Convoy units shall be created by the model in response to the definition of a supply mission. The model shall institute a standard delay time to load the convoy vehicles. This time shall be a function of the type of vehicles being

loaded. Once the supplies are loaded and the convoy moves, the equipment and supplies shall become property of the convoy unit and shall be decremented from the supplying unit. Once created, convoy units shall be subject to the same environment as any other unit. If, for example, a convoy is shot at, casualties shall result and each type of equipment and supplies in that convoy shall be decremented.

Upon arrival at destination, a delay time shall be instituted by the model to simulate unloading the supplies. After the supplies have been unloaded, the convoy unit shall cease to be part of the model and all supplies and equipment carried by the convoy shall become property of the receiving unit.

3.2.3.5.3 Equipment Status - The equipment status of each combat, combat support, and combat service support unit defined in the simulation shall be maintained. The model shall maintain the number of each type of equipment in a unit. Values shall also be maintained for the basic load and current load for each equipment type.

The manning status of a unit's equipment shall also be maintained. If insufficient manning is available to operate the equipment the weapon system shall be considered lost. Also, the model shall determine if sufficient vehicles are available for mounted movement and unit engagements.

A capability shall be provided for the controller to specify resupply of equipment for a unit. Refer to the discussion on Supply Status for a detailed explanation of the resupply function. Equipment shall be included in a convoy unit upon operator request. This shall result in equipment being moved to a supply unit near the front line and the redistribution function shall then be used to transfer equipment directly to a combat unit.

The model shall also simulate the maintenance and repair of equipment. The model shall probabilistically determine which equipment in a unit requires maintenance. This equipment shall then be removed to a maintenance depot and delayed until it can be repaired. The model shall determine the number of personnel required to fix the equipment and the minimum and maximum times to repair for the type of failure.

3.2.3.5.4 Engineering Support - Engineering mission shall be executed in response to operator initiated requests. A maximum of ten engineering missions shall be active at any one time and a mission shall be considered to be active from the time it is entered through the interactive menu until construction is complete. The following types of engineering missions shall be available:

- Construct an antitank minefield.
- Construct an antitank/personnel minefield.
- Construct an antitank ditch.
- Emplace a wire entanglement.
- Construct an abatis (i.e., barrier)
- Emplace a road crater.
- Disable a bridge.
- Breach an obstacle.

As part of the definition of an engineering mission, the operator shall specify the engineering unit or units to be assigned to the mission. A maximum of six units shall be assigned to any one engineering mission. Units which may be assigned to an engineering mission shall include those engineering units which have been allocated to the brigade and have been entered as part of the exercise scenario, as well as units which are organic to division and not actually defined in the scenario data base. Units created as part of an engineering mission shall be created to complete the mission and shall not remain part of the scenario upon completion of the mission.

In all cases, a unit must be maneuvered to the location of the engineering task. This shall be accomplished by the controller specifying the engineering task location. If an engineering unit encounters an obstacle during an engineering maneuver, it shall be delayed the same as other units. An engineering unit shall not, however, be delayed by an obstacle or minefield that it has been assigned to breach.

The assets of all units assigned to an engineering mission shall be pooled together. Upon calculating the available equipment and personnel, the number of each that can be used in the mission shall be computed. The number of pieces of equipment available for the mission shall depend upon the type of task; the number of available personnel shall be reduced by the number of personnel required to man the equipment.

The equipment and personnel work rates for each engineering task shall be in meters per time step per piece of equipment or per person for each engineering task. The equipment rate for a time step shall be computed by multiplying the work rates defined in the scenario data base

by the number of pieces of equipment. The personnel rate shall be computed by multiplying the number of available personnel by the personnel rate defined in the scenario data base.

Equipment and personnel work rates for a time step shall be degraded by suppression, weather (i.e., rain) and darkness. Suppression degradation shall be the average suppression of all units working on the mission. Units which are assigned to a mission but who have not arrived at the task location shall not be included in the computation. Rain shall increase the completion time of an engineering mission by 20%. Darkness shall increase completion time by 50%.

The operator shall be informed when work is started and completed. The operator shall also be provided with the capability of cancelling an engineering mission. In this case the obstacle the engineering mission was assigned to construct shall be deleted. If the mission was the laying of a minefield, and if it is less than one-third complete, the minefield shall be deleted. Cancellation of a minefield breach mission shall result in a lessening of the unit delay time because it was partially breached.

3.2.3.5.5 Decontamination - The CBS model shall accommodate the decontamination of units who have been contaminated by either nuclear or chemical contamination. The units shall be maneuvered to the decontamination center based upon operator request. The unit shall be delayed for a data base specified time interval while they undergo decontamination.

The unit shall accumulate radiation at a slower rate than if it had not been decontaminated. The radiation dose of the unit; however, shall not be reduced as a result of decontamination.

For chemical agents, decontamination procedures shall result in the unit no longer being contaminated. For persistent agents, casualties shall result if a unit has not decontaminated prior to a calculated time (based upon type of agent).

3.2.3.6 Battle Environment - As part of the Battle Environment function, the model shall provide information regarding terrain features, weather, time of day, and radiation and chemical contamination levels.

3.2.3.6.1 Terrain Features - The model shall provide a representation of the battlefield terrain, based upon Defense Mapping Agency (DMA) data, in order to determine if line of sight exists between any two given points. The model shall first determine whether any obstruction exists

in the relief. If there are no obstructions, the model shall determine the probability of target and observer concealment based on relief details, vegetation, obstacles and cultural features. Line of sight exists between any two given points. Line of sight shall be computed for ground-to-ground, ground-to-air, and air-to-ground units.

The status of all key terrain features shall be maintained. The effects of natural phenomena, weapon effects and man-made modifications shall be considered.

The model shall also indicate any lines of communications (e.g., roads, railroads, rivers and bridges) contained in the scenario data base. Lines of communication shall be based upon the DMA map data base.

3.2.3.6.2 Weather - The model shall determine weather conditions (i.e., temperature, weather class, meteorological visibility, ambient light level, wind velocity, and wind direction) at any time during the simulation, and at any point in the exercise area.

Local weather areas shall be used to represent localized weather conditions defined over the exercise area. A maximum of ten local weather areas may be defined. Local weather areas shall be represented by circles of a given radius and shall be allowed to move at constant velocity and direction through the exercise area.

The controller shall also be provided with a capability to change the current global weather class. An alert shall be generated to describe any new weather conditions.

3.2.3.6.3 Time of Day - The model shall determine the time of day and type of moon by comparing the exercise time and the times of moonrise and moonset for that day.

3.2.3.6.4 Contamination -3 The model shall calculate the effect of nuclear radiation and chemical contamination on the battlefield environment.

Both immediate radiation and the effects of fallout shall be considered for nuclear radiation. Weather and terrain shall not initially be used to determine the effects of nuclear radiation. Radiation contours shall be maintained for the following dose rate levels: 1 rad/hr, 20 rads/hr, 100 rads/hr, 300 rads/hr, and 1000 rads/hr. The environmental radiation levels shall be used to calculate a unit's radiation dose rate.

Chemical agent contamination shall be displayed within an area bounded by the dosage contour for that dose at which unprotected personnel have a 50% likelihood of becoming a

casualty. Only the vapor/aerosol hazard area shall be calculated for a nonpersistent agent. For persistent agents, the contact hazard area or contaminated area shall also be calculated. The boundaries of both types of hazard areas shall change as a function of time and weather conditions. Both of these areas shall be displayed and updated every time step. The degree of unit occupied area overlap of these hazard areas, in conjunction with MOPP level and elapsed time shall be used to calculate casualties which result from the chemical attack.

3.2.4 The Battle Simulation Data Logging Function - The Battle Simulation Data Logging function shall perform all operations needed to record and play back battle history data. Major subfunctions performed by this function, as described in the following paragraphs, shall include Data Logging Management and Control, Battle Commentary Logging, History Recording, and Simulation Replay.

Figure 59 depicts the subfunctions performed by the Battle Simulation Data Logging function, as well as all significant functional interfaces among these subfunctions and between these subfunctions and external interfaces. In this figure, the upper left hand diagonal element includes all external functions with which the Battle Simulation Data Logging function interfaces. The remaining diagonal elements are major subfunctions within the Battle Simulation Data Logging function. Entries within each diagonal element define the next level of detail of functions performed by the corresponding function on the diagonal. Entries in off-diagonal elements define the functional interfaces between the two functions on the diagonal forming the off-diagonal element. Off-diagonal entries in a row (either to the right or left of the diagonal element) are functional outputs from the corresponding function on the diagonal. Off-diagonal entries in a column (either above or below the diagonal element) are functional inputs to the corresponding function on the diagonal. Therefore, an off-diagonal entry defines the functional input/output relationship between the corresponding functions on the diagonal.

3.2.4.1 Data Logging Management and Control - The Data Logging Management and Control subfunction shall provide the means to record and playback simulation data.

3.2.4.2 Battle History Recording - The Battle Simulation Data Logging function shall provide the means of recording the following data:

- Environmental simulation data

FORWARD BATTLE SIMULATION 2.2.2 Battle Simulation 2.2.3 Battle Simulation 2.2.4 Battle Simulation 2.2.5 Battle Simulation 2.2.6 Battle Simulation					• Data Logging Parameters • Interface Management Data	• Mission/Action Position/ Description Status History • Mission/Action Tactical • Mission/Action Command • Mission/Action Status/ Location of Simulated Force	• Fault Error Mitigation	• Engagement Display Commands • Interface Management Data
• Interface Management Data					2.3.1 DATA LOGGING MANAGEMENT & CONTROL • Executive Control Function • Executive Logging Parameters • Record vs. No-Record Control	2.3.2 BATTLE SIMULATION DATA LOGGING FUNCTIONS • Control • Simulated Time Log • Logging Parameters	• Control • Simulated Time Log • Logging Parameters • Interface Management Data • Simulated Time Log	• Control • Simulated Time Log • Logging Parameters • Interface Management Data • Simulated Time Log
• Tactical Simulation Data Recording Control Parameters					• Status	2.3.3 BATTLE HISTORY RECORDING • Simulation Control • Initial Status Data Base • Air & Ground Movement • Target Acquisition • Fire & Weapons Effects • Battle Simulation Simulation • Battle Simulation & Logistics • Battle Simulation • Support Unit Activation		• Tactical History Subunit
					• Status	2.3.4 COMMENTARY LOGGING • Record Real Time Log • Record Simulated Time Log		
• Interface Management Data • Engagement Display Data • Command Battle Simulation Event History					• Status • Simulated Time Log (SIL) • Simulated Time Log (SIL)		2.3.5 SIMULATION REPLAY • Replay Commands • Data Base Access	

Figure 59. Battle simulation data logging function.

- Initial tactical conditions
- Target acquisition data
- Unit movements
- Fire and weapon effects data
- Unit engagements
- Administration and logistics data
- Environment and weather data
- Support unit activities
- Intelligence data

This data shall be stored and used for simulation replay and for report generation. Certain data fields shall also be sent to the ECC function for inclusion in the combined ECC/TAF history files. This shall include, as a minimum, unit engagement, unit movement, fire and weapon effects, and administration/logistics data.

3.2.4.3 Commentary Logging - The Battle Simulation Data Logging function shall provide a capability for tagging key events which occur in the scenario. This capability will be used to facilitate training by marking those areas of the scenario in which critical events occurred. This commentary shall be time tagged such that significant events are marked when the scenario is replayed for review.

3.2.4.4 Simulation Replay - The Battle Simulation Data Logging function shall provide a capability for replaying the simulation history data from an operator specified time period.

3.2.5 The Interactive Display and Control Function - The Interactive Display and Control function shall provide all interactive data display and input/output control capabilities required by interactors to monitor and control essential aspects of the scenario. Major subfunctions performed by this function shall include: Map Displays, Tactical Symbolology, Alert Processing, Interactive Menus/Control Processing, and Statistical and Alphanumeric Displays.

Figure 60 depicts the subfunctions performed by the Interactive Display and Control function, as well as all significant functional interactions among these subfunctions and between the subfunctions and external functions. In

[illegible]

Figure 60. Interactive display and control functions.

this figure, the upper left hand diagonal element includes all external functions with which the Interactive Display Control function interfaces. The remaining diagonal elements are major subfunctions within this function.

Entries within each diagonal element define the next level of detail of functions performed by that function. Entries in off-diagonal elements define the functional interfaces between the two functions on the diagonal forming the off-diagonal element. Off-diagonal entries in a row (either to the right or left of the diagonal element) are functional outputs from the corresponding function of the diagonal. Off-diagonal entries in a column (either above or below the diagonal elements) are functional inputs to the corresponding function on the diagonal. Therefore, an off-diagonal entry defines the functional input/output relationship between the corresponding functions on the diagonal.

3.2.5.1 Map Displays - The means to display and manipulate a color background map of the Ft. Irwin area shall be provided. The flexibility to display various portions of the Ft. Irwin area at varying zoom levels, and the means to show various combinations of the following map attributes, and the capability of overlaying tactical symbology shall also be provided:

- Mobility class or relief
- Sun position
- Road/railroads
- Cities
- Hydrography
- Contours
- Grids
- Miscellaneous features

3.2.5.2 Tactical Symbology - The following types of dynamic and static tactical symbology shall be available for display over the background map.

- Unit symbol in FM 21-30 format
- Unit symbol in area occupied format

- Control measures
- Obstacles/minefields
- Nuclear radiation contours
- Nuclear prompt effects display
- Chemically contaminated areas
- Engagement vectors
- Air missions
- Impacting fires
- Local weather
- Weapon position names and quantities
- Sensor/position, direction
- Preplanned targets

All tactical symbology shall be redrawn upon initialization, change of time step, selection of the refresh graphics button, or change of map display location or level. Air unit locations and routes; however, shall be updated every 15 seconds.

The operator shall be able to determine which units are displayed by selecting the display of all combat, combat support, and/or combat service support units. BLUEFOR symbols shall be displayed in blue and OPFOR symbols shall be displayed in red. The unit display selection buttons shall control the type of graphic display (i.e., area occupied or unit symbol) used for the displayed units. The area occupied format shall include a rectangular area which defines the boundaries of the unit, and the unit designator associated with the unit shall be displayed on a flag that is oriented away from the opposing force. When the area occupied mode is selected, the direction of movement button shall also be selectable. Direction of movement shall consist of a line which indicates the direction in which each displayed unit is moving.

Selection of the unit symbol mode shall cause the tactical unit symbol to be displayed at the location of the unit. Appropriate echelon symbols shall appear directly above each unit symbol. When the unit symbol mode is selected, the unit designator button shall also be selectable. The unit designator button shall cause the unit

name to be displayed next to the unit symbol for each displayed unit. The direction of movement button shall not be enabled when the unit symbol mode is selected and the unit designator button shall not be enabled when the area occupied mode is selected. When neither the area occupied nor unit symbol mode is selected, the unit name shall be displayed on the flag, but the area occupied shall not be marked. The operator shall also be provided with the option of selecting specific units for display by using unit bins. Units shall be loaded into unit bins through interactive menu.

Visual detection buttons shall be provided which control the display of those units that the model determines have been visually detected by the units currently selected for display. A separate detection button shall be provided for both the BLUEFOR and OPFOR units.

The display of symbology other than units (i.e., control measures, smoke, illumination, engagement vectors, impacting fires, minefields, obstacles, FEBA and weather cells) shall be controlled by appropriate buttons on the master menu.

Each control measure shall be color coded (i.e., blue for BLUEFOR and red for OPFOR). Each control measure shall be assigned to a tactical category (i.e., maneuver, fire support, mobility/counter mobility, combat service support, or air) and to an echelon (i.e., platoon, company, battalion, brigade, or division for BLUEFOR and platoon, company, regiment, or diversion for OPFOR) by the controller. In some instances, control measures shall be created in the scenario data base and not through the control measure interactive menu. These control measures shall not be assigned to a tactical category and shall be displayed regardless of the tactical category button settings on the master menu. Scenario data base generated control measures shall be assigned an echelon from platoon through division. The echelon settings shall affect the display of these control measures.

The names of the weapons assigned to each unit shall be displayed based upon controller selection. The name of the weapon and the number of each weapon type assigned to the displayed units shall be provided.

Sensors (e.g., ground radar, night vision devices, ground sensors, airborne sensors, and observation posts) shall be displayed upon controller selection. A sensor coverage button shall be used to display a coverage symbol for all selected ground radar sensors.

3.2.5.3 Interactive Menus/Control Processing -- The means to

display master menu and interactive tactical/operational menus shall be provided. The master menus shall be displayed over the entire background map display area on the tactical display (i.e., color monitor). Tactical/operational menus shall be provided using both tactical and support display capabilities. Side panel data, which summarizes model data, shall also be provided.

3.2.5.3.1 Master Menus - Each master menu shall be displayed in a single color. Specifically, Master Menu 1 shall be displayed in blue and Master Menu 2 shall be displayed in red. Highlighting shall be employed to indicate when a function key is on (i.e., activated). A cursor, controlled by the graphics pen/tablet, shall be overlayed on the master menu displays to assist controller function key selection.

3.2.5.3.2 Tactical/Operational Menus - A standard interactive menu topology shall be provided to facilitate training of operator personnel and to improve the operational efficiency of data input through either the color monitor display or the alphanumeric support display.

A standard set of display primitives, as defined in the 500 Player CIS Requirements Design Specification (RDS), shall be employed for implementation of the menu system. The means to make selections from lists, define static symbology on the digital map, enter numeric and alphanumeric data, and terminate operations of the menu shall also be provided. Cues shall be provided to the controller to show when a selection has been made or to prompt him through the data entry operation.

As a minimum, the following tactical/operational menus shall be provided for operator control of the CBS model for both BLUEFOR and OPFOR operations:

- Simulation Control
- Activate Units
- Unit Location
- Maneuver Control
- Support Fire
- Direct Fire
- Nuclear Event Definition

- Chemical Event Definition
- Air Mission
- Air Defense
- Preplanned Missions
- Obstacles
- Control Measures
- Intelligence Control
- Engineering
- Resupply
- Redistribution
- Weather
- Unit Bin Definition
- Key Event Tagging
- Alert Routing
- Task Organization

3.2.5.3.3 Side Panel Data - The following operational and display parameters shall be displayed in the left hand display margin:

- current tactical simulation time,
- Universal Transverse Mercator (UTM) coordinates of the selected map center,
- UTM coordinates of the cursor,
- selected map attributes,
- map display level and zoom level,
- status of the tactical simulation model (i.e, running, initializing, frozen, replay, replicate, or halted), and
- prompts.

The right side panel shall either contain a color dictionary or shall indicate the number of available slots in the tactical simulation for certain data items.

The color dictionary shall be provided to identify functional characteristics of color features. The dictionary shall present colors used to represent cross-country mobility (CCM) classes and infrastructure attributes. The dictionary display shall consist of an English language descriptive message or acronym and a sample of the color currently selected to represent that feature.

Data shall be provided each time step which informs the operator of the number of available slots in the tactical simulation for the following data types:

- Air missions
- Convoy missions
- Engineering missions
- Control measures
- Obstacles/minefields
- Sensors
- Local weather cells
- Operations groups

3.2.5.4 Statistical and Alphanumeric Displays - The alphanumeric support display area shall be divided into two distinct areas; the display mode ID line and the data display area. The display mode ID line shall be the top line of the display. Line two shall be a horizontal line to provide visual separation between the ID line and the data display area. The ID line and the separator shall be displayed whenever the CRT is being used to support standard controller station operations. The ID line shall include the currently active display mode, station ID, and number of alerts in the alert queue. The currently active display mode indicator shall provide alphanumeric data to inform the operator of the display mode which is currently enabled at the CRT and associated keyboard. Possible display modes shall include alerts, menus, and reports.

The data display area shall include all but the first three display lines. The alert display mode shall be the default mode and shall be invoked automatically upon initialization.

Upon request from the CBS controller, as a minimum, the following reports shall be available either for display on the operator's alphanumeric terminal during the simulation or may be printed on the lineprinter at the end of the simulation.

3.2.5.4.1 Unit Special Status Report - The Unit Special Status Report, which shall be available only during the simulation, shall identify the unit name, number, UTM location, operational state, suppression, equipment types and amounts visually detected, speed, elevation, and vegetation class.

3.2.5.4.2 Log/Admin Special Status Report - The Log/Admin Special Status Report, which shall be available only during the simulation, shall identify the unit name, number, UTM location, and operational state of the unit. For each assigned equipment type, the basic load, current load, and amount manned shall be provided. For each assigned ammunition type, the current load amount is shown and the basic and current levels of personnel manning and the current load of gasoline and diesel fuel are also provided. The equipment current load shall be backlighted if the current load is below 25% of basic load for specific equipment identified in the data base.

3.2.5.4.3 Nuclear, Biological and Chemical (NBC) Reports - The NBC-1, NBC-4 and NBC-5 reports shall be used by the role players to simulate the receipt of NBC reports from various units who observed the nuclear or chemical event.

The nuclear and chemical event description reports shall describe the environmental effects caused by each nuclear or chemical event, including such information as direction measured clockwise from grid north to left then right, the radial lines of the fallout pattern, effective windspeed, downwind distance of zone one, and cloud radius.

3.2.5.4.4 Timing Report - The Timing Report shall provide a summary by timestep of the activity of the modules and major submodules of the CBS model. For each time step, the total active and idle time of the entire simulation, plus the lag time between the model time and clock time shall be shown. The remaining columns shall indicate the module activity with a further breakdown of major submodules showing activity time and number of times each submodule is used during the time step.

3.2.5.4.5 Menu Usage Report - The Menu Usage Report shall provide a summary of menu activity during the simulation. All of the possible menus shall be listed and the number of times each menu type was used by the OPFOR and BLUEFOR role players shall be indicated.

3.2.5.4.6 Casualty Status Reports - The Casualty Report shall depict BLUEFOR personnel and equipment losses by weapon and OPFOR personnel and equipment losses by weapon.

The following categories of status reports shall be provided:

- Unit Status Report
- Equipment Level Report
- Ammunition Status Reports
- Fuel Level Report
- Personnel Level Report
- LOS Target Acquisition Report
- Unit LOS Detection Report
- Direct Fire Reports
- Support Fire Reports
- Air Defense Fire Report

The Unit Status Report shall contain the following information for each unit at specified time intervals during the exercise: unit name, indicators if the unit fired or moved during the interval, unit location and elevation, direction faced, speed of movement, indication if the unit is on-road or off-road, operational state of the unit, intent of the unit, movement data that reflects the type of movement of a unit, the leg of a route the unit is currently on, which special route (if any) the unit is currently on, and an indication if the unit is on a special or old route, percent of suppression of the unit, readiness status of the unit, terrain attributes of the unit location (including slope, vegetation, and CCM class), and the force ratio being experienced by the unit.

The Equipment Level Report shall provide the following data for each unit at the end of each time interval: number and name of the unit, number and name of each assigned equipment type and the amounts of basic load, current load, and number manned for each equipment type.

Ammunition status shall be reflected in four formats: Rounds Remaining by Unit, Rounds Expended by Ammo Type, Rounds Expended During Exercise by Unit, and Rounds Expended During Exercise by Ammo Type. The Rounds Remaining by Unit,

and Rounds Expended by Ammo Type reports both reflect ammunition status at data base defined time intervals during the exercise. The Rounds Expended During Exercise by Unit and Rounds Expended During Exercise by Ammo Type reports shall both summarize all ammunition expenditures during the entire exercise.

The Fuel Level Report shall show the basic load and current load (in gallons) of gasoline and diesel fuel, for each unit, at specified time intervals during the exercise.

The Personnel Level Report shall show the following information for each unit at specified time intervals during the exercise: unit number and name, initial and current strength in the categories of total personnel, officers, noncommissioned officers, and enlisted men; and the number of personnel in vulnerability classes of standing, prone, in a foxhole, and completely shielded.

The LOS Target Acquisition Report shall contain the following data for BLUEFOR units against OPFOR units and for OPFOR units against BLUEFOR units: Percentage of target not concealed, percentage of target visually detected, aural detection flag, and a radar detection flag.

The Unit LOS Detection Report shall show, for each unit, the unit location, elevation, terrain slope and vegetation class, and the number of opposing force units that detected the unit during the time interval.

The Direct Fire Report shall show the fired weapon(s), the unit number of the target, and the number of rounds fired for each unit that fired during the time interval. The Support Fire Report shall show the number and name of the firing weapon, the mode of fire and the number of rounds fired for each support fire unit that fired during the time interval. The Air Defense Fire Report shall show the number and name of the unit, the number of rounds fired and the quarter of the time interval at which the firing occurred.

3.2.5.4.7 Event Report - The Event Report shall provide a list of all events that occur during the exercise. The events shall be listed in the order in which they are entered into the system. The report shall reflect the game time, event time, role player position, a two-character event type code, and the event data. The event data position of the report shall be variable and contain all pertinent data to describe the event.

3.2.5.4.8 Alert Reports - Alert reports shall be printed in two formats: Alert Listing and Alert Count. The operator shall be able to sort the Alert Listing report in four ways: by unit, time, alert category, and alert type. The Alert

Count format shall provide the unit name, alert number, and the number of occurrences of the alerts for each 15-minute increment of the exercise.

3.2.5.5 Alerts Processing - Various tactical alerts shall be generated by the CBS model in response to events which occur within the model. The tactical alerts shall be divided into functional categories and subcategories. Controllers shall be provided with the capability of filtering the alerts shown at his support display based upon alert category and/or affected units.

The tactical alerts shall be displayed as they are received from the the model until the support display page is full. A maximum of 50 alerts shall be stored in a queue for display. The number of alerts in the queue shall be displayed at the top of the screen.

The operator shall also be provided with the capability of routing the alert displayed at the top of the screen to another console and of attaching a two line message onto the alert, if desired.

Controller messages shall be displayed on the bottom quarter of the tactical display. These messages inform the CBS controller of significant events which occur in the conduct of a particular exercise or when the model is unable to carry out events due to equipment status or performance parameters. Messages which refer to the status of the exercise shall be routed to all CBS controller stations. Command and control event messages shall, however, only be routed to the station of the controller that originally requested the command and control event.

3.3 DETAILED FUNCTIONAL REQUIREMENTS FOR ECC/TAF

3.3.1 Introduction - The ECC/TAF component of the NTC shall perform three primary functions:

- (1) coordinate an NTC exercise comprised of live and simulated units;
- (2) provide an operator with the capability of performing division responsibilities; and
- (3) provide the tools to generate an After Action Review (AAR) of an exercise for the Brigade TOC and the CPX Battalion TOCs.

The result of the above provisions, in the operational sense, is the controlled flow of information between the brigade and its subordinate and superior command units. The

ECC/TAF shall create a brigade level trainer at the NTC.

The ECC operators shall be responsible for coordinating the entire NTC exercise such that the information sent to the brigade TOC will appear to be coming from three battalions who are engaged in the same operational exercise. In conjunction with this responsibility, the ECC operators will monitor the BLUEFOR and OPFOR activity of both live and simulated units to ensure that no one unit is crossing into the area occupied by an adjacent battalion.

Certain ECC stations shall be responsible for providing division role playing when required by the operational scenario. They will coordinate the issuance of intelligence, weather, administration/logistics, aviation and NBC reports in accordance with the requirements set forth in the operational scenario. They shall also coordinate the firing of any nuclear burst simulator and chemical simulators, and will be responsible for role playing activities of adjacent units, as required.

The primary function of the TAF operators shall be to provide AARs to the CPX battalion TOCs and the brigade TOC. The AARs shall provide detailed feedback after each mission, a final diagnostic AAR and a take-home package which will serve as a basis to guide subsequent home station training programs. The Training Analysis and Feedback Officer (TAFO) and his assistants shall be able to structure and build the AARs during an ongoing exercise segment.

The integration of the ECC/TAF functions into the NTC CIS includes the development of a separate history, the interfaces of this history to the current EMC/TAF processes and the simulation status data base, a new interactive display and control mechanism to support the coordination and review of the combined exercise history, and new CC processes to provide statistical data processing for the combined history data elements.

The creation of the new history shall not interfere with the current capabilities provided for the two live EMC/TAF training battalions. Specifically, the NTC history architecture shall allow for the recording and playback of two live EMC/TAF histories, the replay of one closed history and the recording and replay of one ECC/TAF history.

The definitions that follow are provided to eliminate confusion in terminology used in this document:

- player - a participant in the live EMC/TAF exercises for which position and event data may be collected.

- unit - an aggregation of players into a group for which statistics may be calculated.
- instrumented unit - a unit for which there exists at least one b-unit capable of generating signals detectable by the instrumentation subsystem.
- uninstrumented unit - a unit in which no player has a b-unit assigned.
- simulated unit - a unit (platoon or above) which has been defined in the scenario of the engagement model.
- no player units - a unit for which players may never be associated.
- notional unit - a unit which does not exist physically, nor in the simulation scenario, but is a participant in the ECC/TAF exercise. Typically, these units will represent upper echelon units which the brigade receives information from or provides information to. Notional units shall always be no player units.
- EMC/TAF history - a history whose data originates from a field exercise, or in the case of a demonstration, data generated from the Test Support Driver (TSD) (data indistinguishable from field data).
- ECC/TAF history - a history comprised of unit data generated from a combination of live, simulated, and/or notional units.
- Simulation history - a data base comprised of unit data generated by computer simulation of a tactical engagement.

3.3.2 Functions Of The ECC/TAF - The ECC/TAF history shall provide the information needed to coordinate the brigade level exercise and to provide meaningful AARs to brigade and battalion commanders and staffs. Major operational functions performed shall include:

- Command, control and communications
- Intelligence
- Support Fire Planning

- Combat Support/Combat Service Support
- Force Movement

Each of these functions is described in the following paragraphs.

3.3.2.1 Command, Control and Communications - The ECC/TAF history shall provide its controllers with the information needed to coordinate the brigade level exercise by monitoring the participating live and simulated units and to role play the division when required. In order to fulfill the functions of the division role player, the operator will transmit operation orders for both the BLUEFOR and OPFOR, NBC reports, intelligence reports, support fire resources, and brigade resource allocation orders. The operator will also receive and log reports from the brigade. A capability shall be provided which allows the controllers to interactively modify brigade resource allocations, support fire allocations, and mission requirements. These new orders will then be transmitted to the brigade for execution.

Most reports and operations orders will be a part of the training scenario and will be transmitted to the operator at appropriate times. The division role player, however, may elect to transmit some information, particularly intelligence reports, based upon the information reported by the brigade.

The ECC operators shall have information from the live and simulated units to assist in the command, control and communication function (e.g., unit locations, unit engagement data, combat support/combat service support information and nuclear/chemical environmental data). In addition to the data received directly from the other histories and the simulation data base, the controller shall have the capability of entering data into the history through interactive menus. This data shall consist of such things as control measures, equipment status, personnel status and supply status.

The division role player will record all communication received by the brigade to facilitate AARs. The division role player shall evaluate the accuracy of the received reports based upon the ECC/TAF history's situation display.

3.3.2.2 Intelligence - As part of division role playing, the ECC/TAF operators shall be responsible for disseminating intelligence information to the brigade. In addition, TAF operators shall record combat information and processed intelligence data received from the brigade. This

information will be used to evaluate how well the brigade is utilizing available intelligence data and how well the division is being informed of the battle situation.

Much of the intelligence information disseminated to the brigade will come from the exercise's operational scenario. Intelligence information which is defined in the scenario and disseminated to the brigade will come from such sources as signal intelligence, photo intelligence, general aviation reports, SLAR detections, reconnaissance reports and prisoners of war. A capability shall be provided for entering messages into the history and having them replayed at controller specified time. Controllers can then enter messages which correspond to events defined in the operational scenario and be reminded when these events should occur. If, for example, the scenario called for the dissemination of some division level intelligence data to the brigade at 0500, the operator would enter a message into the history some time at the beginning of the exercise. This message would be assigned a time of 0500 and to a tactical/alert category by the controller. Then, at 0500 the message would be displayed at the support display as an alert. The controller could then determine whether or not to disseminate the information, based upon the play of the exercise.

The standard set of NTC control measures shall be utilized to define the intelligence collection plan provided to the brigade and battalions. In addition, the controller shall be provided with a capability for recording intelligence information which is received from the brigade. This shall include radioed combat information such as spot reports, shell reports, bomb reports, mortar reports, periodic event reports, NBC reports, sensor detection, and human intelligence (i.e., visual detections). Through the interactive menu, the controller shall be allowed to indicate that certain equipment or obstacles have been detected and reported by the brigade. Weather data shall also be recorded. Intelligence buttons on the master menu shall allow the ECC/TAF operator to display data which has been reported through intelligence channels. A log shall also be available which shows the intelligence information received and disseminated throughout the exercise. This report shall contain only that information entered by the ECC/TAF controllers.

The displays associated with intelligence operations shall be used in the AARs to evaluate how the brigade and CPX battalions were performing their assigned intelligence functions. They shall also be used to facilitate division role playing by providing the controller with information in order to decide whether or not new intelligence data should be sent.

3.3.2.3 Support Fire - The ECC/TAF shall disseminate fire plans and shall role play any required division level support fire assets. The division role player shall also be responsible for coordinating nuclear and chemical events with the field cues and between all brigade units.

Field artillery units shall be assigned to the brigade by the division role player at the start of the exercise through operations orders. These units shall be available for either direct or reinforcing support to the brigade and its battalions. The exercise controller shall be responsible for monitoring all support fire radio networks to ensure that all firings which are within the zone of action covered by a live battalion are entered into the appropriate EMC/TAF history and that all firings which are within the zone of action covered by a notional battalion are entered into the simulation data base.

When a nuclear or chemical event is scheduled to occur, the division role player shall enter the mission into the ECC/TAF history. This shall cause the appropriate models to be executed at a particular exercise time, and shall affect each training battalion and the simulation exercise. The model shall calculate all environmental effects and each individual history shall be responsible for storing/accumulating player doses and providing casualty recommendations. The simulation data base shall provide all effects for the simulation units based upon the environmental effects calculated by the model.

3.3.2.4 Combat Support/Combat Service Support - The ECC/TAF shall be provided with the capability of supporting combat support and combat service support training for the brigade. A capability shall also be provided for division role play of these functions, as required to support integrated battlefield training.

The system shall accommodate division role playing of brigade resource allocations. Initial allocations shall be based upon the training scenario, and changes to the initial allocations shall be handled based upon brigade requests for additional resources. A series of reports shall be provided which summarize the brigade's personnel, supply, and equipment status throughout the history. The information in these reports shall be based upon data input from the simulation data base and the EMC/TAF histories. Reports shall also be provided which indicate casualty statistics, radiation status, and chemical status for each unit participating in the brigade level exercise. These reports will be used for both exercise monitoring and control, and training analysis and feedback.

3.3.2.5 Force Movement - The movement of all units

participating in the brigade level exercise shall be monitored in order to ensure that the live and notional units are not crossing over defined boundary lines and that the units are correctly following their operation orders. The Interactive Display and Control Processing function shall be responsible for the display of units. Movement data shall be input from the simulation data base and the EMC/TAF histories. Based upon the movement of the units, the division role player may issue new orders or disseminate appropriate information.

3.3.3 Architecture of the ECC/TAF History - In order to assist in the coordination of simulation and EMC/TAF exercises, and in the preparation of AARs, a special exercise history shall be created. This history shall contain unit level data from both live and simulated battalions and from the data entered into the history by the operator through use of interactive menus.

The ECC/TAF history shall provide the capability of displaying graphic and alphanumeric data in real or accelerated time beginning at any point in the exercise history. This history shall contain only unit level information for a maximum of 475 units.

3.3.3.1 Description of the ECC/TAF History - Figure 61 represents the generation, flow, and storage of information required to create the EMC/TAF, simulation and ECC/TAF histories. The ECC/TAF history shall be designed to accommodate the following types of unit data:

- Unit location status
- Unit engagement data
- Indirect firing data
- Nuclear environmental data
- Chemical environmental data
- Radiation status by unit
- Chemical status by unit
- Minefield statistics
- Casualty statistics
- Equipment status

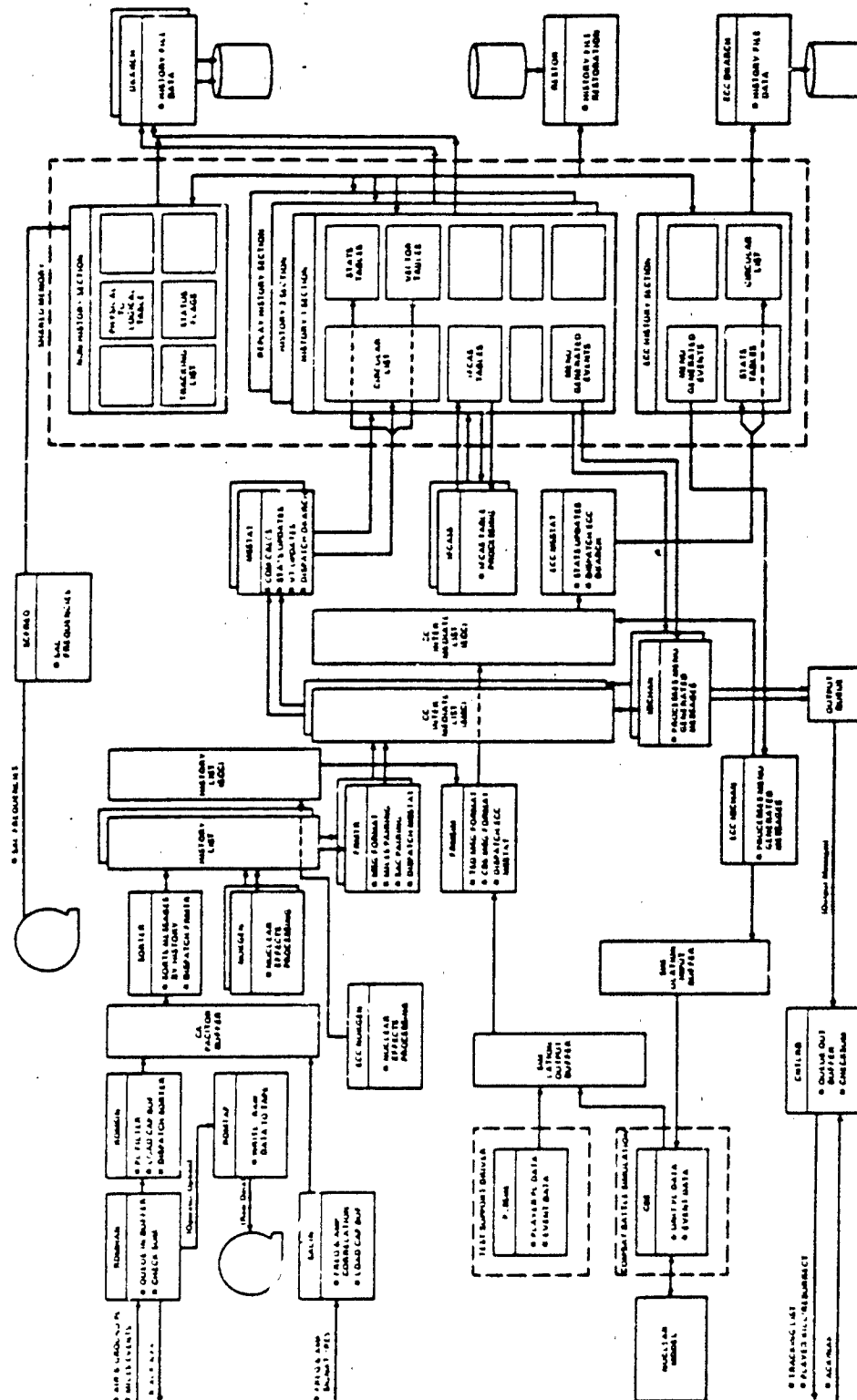


Figure 61. Computational component processing.

- Unit personnel status
- Supply status

The ECC/TAF history shall be organized according to an established task organization of live and simulated units. At ECC/TAF history initialization, the operator shall select the source of data which shall provide ECC/TAF history inputs. Any selection of up to three live or simulated battalions shall be permitted. For EMC/TAF histories, the unit definitions and task organizations shall be automatically provided to the ECC/TAF history. For the simulated units, the ECC/TAF operators shall be required to build each battalion's task organization from the leaf units provided by the simulation. Each history associated with the ECC/TAF history shall have a Battalion Under Training associated with it and this indicator shall be used by the Interactive Display and Control Component for later graphic display control. The ECC/TAF history shall define the Brigade Under Training and each battalion under training shall be automatically task organized to that brigade. During real-time exercise operations, the controller shall have the capability of modifying the task organization of notional or simulation units.

3.3.3.2 EMC/TAF To ECC/TAF Interface Description - The EMC/TAF history shall provide the following data to the ECC/TAF history:

- Unit definitions
- Unit task organizations
- Unit locations
- Unit engagement data
- Indirect firing data
- Unit radiation status
- Unit chemical status
- Unit casualties
- Minefield casualties
- Vehicle status
- Personnel status

3.3.3.3 CBS To ECC/TAF Interface Description - The simulation model shall provide the following data to the ECC/TAF history for leaf level units:

- Unit locations
- Unit engagement data
- Indirect firing data
- Unit radiation status
- Unit chemical status
- Unit casualties
- Minefield casualties
- Equipment status
- Personnel status
- Supply status

3.3.3.4 ECC/TAF To CBS Interface Description - NBC events entered by the ECC/TAF operator shall be sent to the simulation. The NBC event shall be presented to the model in the same format generated by the CBS IDC for a CBS operator generated NBC event. NBC events shall, at this time, be the only data passed from the ECC/TAF to CBS.

3.3.3.5 ECC/TAF to EMC/TAF Interface Description - NBC events entered by the ECC/TAF controller shall be sent to the EMC/TAF history. NBC events shall be the only data passed from the ECC/TAF to the EMC/TAF histories.

3.3.3.6 Coordination of the Live and Simulated Histories - The ECC operator shall be responsible for coordinating the live and simulated histories.

The EMC/TAF operators shall define the initial player and unit data for the EMC/TAF histories to include:

- Identification of data base units.
- Task organization of units identified in the data base (by force - Red/Blue).
- Identification of weapons/vehicles by type and identification number (bumper number).

- Association of instrumentation with particular weapons/vehicles (by force - Red/Blue/White).
- Assignment of instrumented weapons/vehicles to units by instrumentation identification number and weapon/vehicle identification number.

The initialization data for EMC/TAF units shall be made available to the ECC history when a battalion is selected for inclusion in an ECC/TAF history. No player initialization data shall; however, be sent to the ECC/TAF history.

The simulation controller shall be responsible for initializing the simulation scenario including:

- Unit names
- Unit positions
- Unit personnel, equipment and ammunition levels
- Prescheduled events
- Exercise start time

The only initialization data which shall be sent to the ECC/TAF history from the simulation shall be the unit names, positions and personnel, equipment and ammunition levels. The unit data defined for the simulation shall be for leaf level units only. All higher echelon units shall be defined at the ECC/TAF history and be generated based on the combined center of mass of the lower echelon units.

The ECC/TAF controller shall define the history initialization file for the ECC/TAF history units and the simulation units. The EMC/TAF units selected for inclusion in the combined history shall be automatically initialized in the ECC/TAF history.

The ECC controller shall inform the simulation controller when all initialization data has been entered. The simulation controller shall initiate the simulation in response to an order to do so from the ECC controller. The simulation controller shall validate the exercise start time for correctness and initiate execution of the simulation. Likewise, operational procedures shall be utilized to coordinate the start of the EMC/TAF and ECC/TAF history segments. An open real segment of a selected EMC/TAF history shall automatically contribute unit data to the ECC/TAF history. If the open EMC/TAF history segment is

null, then no data shall be entered from the live engagement into the open segment of the ECC/TAF history.

3.3.4 ECC/TAF Computational Component Processing - Data shall automatically be entered into the unified ECC/TAF history from the simulation data base and from selected EMC/TAF histories. Data may also be entered through the interactive menu capability provided with the ECC/TAF history. The data in the ECC/TAF history shall be organized in the same basic manner as an EMC/TAF history. The following processing features shall be provided by the CC.

3.3.4.1 Unit Position Data Processing - The position location of players defined in the EMC/TAF history shall be provided to the EMC/TAF history via the RDMS/CC interface. This player level data shall then be aggregated, based on task organization, by the EMC/TAF Master Statistician. Unit level position data shall then be provided to the ECC/TAF history.

The position of leaf units shall be provided by the simulation and the center of mass of higher echelon units shall be calculated by the ECC/TAF history.

An interactive menu shall be provided for manually entering the position location of ECC defined notional units.

3.3.4.2 Unit Engagement Data Processing - Unit engagement data shall be provided by the EMC/TAF and simulation histories. EMC/TAF engagement data, determined on the basis of player level engagements, shall be provided to the ECC/TAF history. Engagement data for simulated units shall include data for the leaf units defined in the simulation scenario. No engagement data shall be available for notional units defined in the ECC/TAF history.

3.3.4.3 Support Fire Data Processing - Indirect firing data shall be transmitted from the model and EMC/TAF histories to the ECC/TAF history. Fire mission alerts, firing vectors and fire mission log items shall be provided for all leaf units.

3.3.4.4 Nuclear Event Processing - The nuclear environmental data (i.e., fallout prediction, prompt effects radii, and radiation fallout contours) calculated by the NBC model shall be available for display by the ECC/TAF interactive display and control component.

As depicted in figure 61, each history shall have its own nuclear model. In ECC real history segments, only those events defined by ECC controllers shall be executed. In non-ECC real segments, the nuclear models shall be

controlled by the appropriate battalions. The nuclear model controlled by the ECC/TAF history shall consolidate environmental effects from ECC generated events. Events which occur outside of the ECC/TAF history shall not be combined.

Radiation status for live and simulated units shall be generated by the EMC/TAF and simulation nuclear models and sent to the ECC/TAF history. The radiation status for notional units defined at the ECC/TAF station shall be calculated by the ECC/TAF Nuclear model.

3.3.4.5 Chemical Event Processing - The chemical environmental data (i.e., downwind hazard and chemically contaminated areas) shall be handled in the same basic manner as the nuclear environmental data. The specification of the interface between the chemical model and the ECC/TAF history shall be further refined pending the final design of the chemical model.

3.3.4.6 Logistics Support Processing - The EMC/TAF histories shall provide the ECC/TAF history with equipment status and personnel status data. Equipment status data shall include the starting value and amount of equipment lost during the exercise segment for each leaf level unit. Personnel status shall include initial strength, and number of personnel wounded, killed, missing in action, and captured for each leaf level unit.

The simulation shall also provide equipment and personnel status data, including initial vehicle and equipment strength, initial personnel levels and the amount of personnel and equipment lost during the exercise.

The ECC/TAF controllers shall be responsible for entering and updating the equipment and personnel levels of the notional units through use of the Vehicle Status and Personnel Status interactive menus.

Minefields shall be entered by the EMC/TAF and simulation controllers via the Control Measure and Obstacle menus available at EMC/TAF and CBS stations, respectively. This information will be communicated through radio communications at the CIS to the ECC/TAF controller. The ECC/TAF controller may then enter the control measures as required by the exercise. Minefield casualty statistics shall be made available by the EMC/TAF and simulation histories.

Casualty statistics for both live and simulated unit shall be passed by the EMC/TAF and simulation histories to the ECC/TAF history. This data shall include the total number of casualties for a unit.

A resource allocation log shall be maintained by the ECC/TAF controller in order to evaluate the number of available brigade resources. This information will be used to determine how effectively the brigade is using available resources and whether resources are available for resupply to Brigade in support of Division role playing.

3.3.4.7 Intelligence Processing - The ECC/TAF controller shall enter intelligence data received from and transmitted to the Brigade via the Intelligence interactive menu at the tactical display. The controller shall be provided with the capability of entering force detections, obstacle detections and weather data. All entries made at the Intelligence menu shall be available for display at the tactical display and shall be automatically logged in the Intelligence log. The display of intelligence symbology shall be controlled by buttons on the BLUEFOR master menu. All symbology used for the intelligence displays shall be black.

3.3.4.8 Statistical Data Processing - The following statistical displays shall, as a minimum, be provided at the support displays to support ECC/TAF functional requirements. Additional displays remain to be specified.

- Elements of Information

Field controller assessments of unit performance, measured against a set of Elements of Information (EI) shall be maintained, as depicted in Figure 62. The maximum number of EIs to be reported for each selected unit during the exercise segment is ten, and the same ten EIs must be used throughout the segment. EI inputs are arranged by OC and by unit being observed. In each of these groups, they are further tabulated by EI category.

- Task Organization

The superior-subordinate relationship of BLUEFOR and OPFOR live, simulated and notional units shall be maintained for purposes of statistical processing. The task organization shall be available for display by force, as depicted in Figure 63.

- Fire Support Log

The Fire Support Log shall detail the results of indirect fire missions entered through the live and simulated histories. Figure 64 depicts the format of the report.

	1	2	3	4	5	6	7	8
1	0	0	0	0	0	0	0	0

ELEMENTS OF INFORMATION 2-123 DD MMM YY HH:MM - DD MMM YY HH:MM

UNIT: (UNIT NAME OR BLUEFOR)

SELECTED EIs:

NNN ASSOCIATED TEXT STRING
 NNN ASSOCIATED TEXT STRING
 NNN ASSOCIATED TEXT STRING
 NNN ASSOCIATED TEXT STRING
 NNN ASSOCIATED TEXT STRING
 NNN ASSOCIATED TEXT STRING
 NNN ASSOCIATED TEXT STRING
 NNN ASSOCIATED TEXT STRING
 NNN ASSOCIATED TEXT STRING

EI NNN NNN NNN NNN NNN NNN NNN NNN NNN

TIME
 NNNNNN N N N N N N N N N

MEAN VALUE N N N N N N N N N

Figure 62. Elements of information.

TITLE: ELEMENTS OF INFORMATION - UNIT

DISPLAY TYPE: TABULAR

CONTENT:

<u>Column Heading</u>	<u>Description</u>
SELECTED EI's	The text string associated with each of the EI's included in the display.
UNIT	Name of the unit for which data is desired, or BLUEFOR to indicate OPFOR controllers observations of BLUEFOR activities in general.
EI	Horizontal list of up to ten Elements of Information numbers to be reported on for this unit (or BLUEFOR units in general) for this exercise segment.
TIME	Time of report of the list of Elements of Information.
MEAN VALUE	The average OC value assigned for each EI category for the selected time period.
DISPLAY CRITERIA:	
TIME	The data is chronologically ordered, providing all data for the current exercise segment, up to the time of the display request, or for an operator defined time interval.
UNIT	The requestor specifies the unit for which EI data is desired, or BLUEFOR. Each line of data contains the time of an EI report, followed by the values (0-9) reported for each EI number listed at the top of each column.

Figure 62. Elements of information (continued).

	1	2	3	4	5	6	7	8
1	0	0	0	0	0	0	0	0

ELEMENTS OF INFORMATION 2-123 DD MM YY HH:MM
 EI: NNN, ASSOCIATED TEXT STRING
 UNIT VALUE TIME OC
 XXXXXXXXXXXX N NNNNNN NNN

Figure 62. Elements of information (continued).

TITLE: ELEMENTS OF INFORMATION - BY EI

DISPLAY TYPE: TABULAR

CONTENT:

<u>Column Heading</u>	<u>Description</u>
EI	Assigned three-digit number of the desired EI, followed by the 40 character title of the EI.
UNIT	Name of the unit for which the EI data has been collected, or BLUEFOR to indicate OPFOR controllers observations of BLUEFOR activities in general.
VALUE	A digit, 0 to 9, indicating the most recent evaluation of the EI for the unit.
TIME	The time of the most recent report of this EI for the unit.
OC	Three-digit identifier of the observer/controller who made the EI report.
DISPLAY CRITERIA:	
EI	The requestor specifies the EI number for which data is desired. Data shall be presented for all units that have had data reported for the specific EI.

Figure 62. Elements of information (concluded).

	1	2	3	4	5	6	7	8
1	0	0	0	0	0	0	0	0
TASK ORGANIZATION				2-123	DD MMM YY HH:MM			

Figure 63. Task organization.

TITLE: TASK ORGANIZATION

DISPLAY TYPE: TABULAR

CONTENT:

Column Heading

Description

FIRST COLUMN

The name of a unit defined in the system data base.

SECOND COLUMN

The names of units immediately subordinate to the above listed unit.

THIRD COLUMN

The names of units immediately subordinate to the unit named in the second column.

Similarly, for COLUMNS
FOUR through SIX

DISPLAY CRITERIA:

TIME

The display shall reflect the task organization at an operator specified exercise time or, as a default at the exercise time as displayed on the Tactical Display at the time of the display request.

NOTE: The operator specified time must be a time which is included in the current exercise segment.

UNIT

The requestor specifies a unit for which task organization data is desired.

Figure 63. Task organization (concluded).

	1	2	3	4	5	6	7	8
1	0	0	0	0	0	0	0	0

FIRE SUPPORT LOG 2-123 DD MMM Y' HH:MM - DD MMM YY HH:MM

TIME TGTNR TGT LOC FIRING UNIT SHELL/FUSE ROUNDS
DD HH:MM AANN AANNNNNNNN XX/NN-NN AAAAAA/AA NNN
EFFECT: WIA:NN KIA:NN (VEHICLE N) (VEHICLE N) (VEHICLE N) (VEHICLE N)

Figure 64. Fire support log.

TITLE: FIRE SUPPORT LOG

DISPLAY TYPE: TABULAR

CONTENT:

<u>Column Heading</u>	<u>Description</u>
TIME	Time of mission execution.
TGTNR (IMMED)	Target number of target, "IMMED" if immediate mission with no target number assigned, or group designation if applicable.
TGT LOC	UTM grid location for mission effects/delivery.
FIRING UNIT	Name designation of unit executing mission.
SHELL/FUSE	Type of shell/fuse combination used.
ROUNDS	Number of rounds of ammunition expended in firing.
EFFECT	Description of mission effects for uninstrumented personnel and vehicles (by type), and instrumented losses by player identification.
DISPLAY CRITERIA:	
TIME	All data on fire support missions shall be displayed for the entire history at an operator specified time range or, as a default, since the beginning of the history to the exercise time as displayed on the Tactical Display at the time of the display request.

Figure 64. Fire support log (continued).

FORCE

The fixed portion of this format occupies one line per entry with effects on subsequent lines, with uninstrumented losses followed by instrumented losses by ID, for as many lines as necessary.

The operator specifies whether the display is for the BLUEFOR or OPFOR Fire Support Log.

Figure 64. Fire support log (concluded).

- **Minefield Event**

The minefield events entered by the EMC/TAF operators shall be available for display on the ECC/TAF alphanumeric displays. Formatted minefield alerts generated by the CBS simulation shall be passed to the ECC/TAF history, specifying the unit encountering the minefield, the units location, and the delay time to breach the minefield. Figure 65 depicts the format of the report.

- **Vehicle Status**

The current status of vehicles and other key battlefield equipment shall be displayed. The status data shall include the initial number of vehicles by type, the number lost due to battle, maintenance and administration, and the number of operational vehicles. This data will be provided for live and simulated units through the appropriate ES and simulation interfaces Figure 66 depicts the format of the report.

- **Personnel Status**

The current status of personnel strength and battlefield losses shall be maintained and displayed in the Unit Personnel Status tabular display as depicted in Figure 67.

- **Intelligence Log**

ECC console operators shall use an interactive menu to log intelligence information passed to and received from the brigade TOC. This data shall be available for display as depicted in Figure 68.

- **Resource Allocation Log**

ECC console operators shall use the Resource Allocation menu to document authorized allocation of resources including personnel, equipment, ammunition, fuel, and water. This data shall be displayed in a tabular log as depicted in Figure 69.

- **Prescheduled Event Log**

The command and control and intelligence events entered through the prescheduled events menu shall be displayed in a tabular Prescheduled Events Log as depicted in Figure 70.

	1	2	3	4	5	6	7	8
1	0	0	0	0	0	0	0	0
MINEFIELD EVENT SUMMARY				2-123	DD MMM YY HH:MM - DD MMM YY HH:MM			
TIME		UNIT		LOCATION		TIME TO NEGOTIATE		
DD HH:MM	XXXXXXXXXXXXXXXXXXXXX			AANNNNNN		HH.H		
EFFECT: WIA:NN KIA:NN (VEHICLE N)___ (VEHICLE N)___ (VEHICLE N)___ (VEHICLE N)___								

Figure 65. Minefield event summary.

TITLE: MINEFIELD EVENT SUMMARY

DISPLAY TYPE: TABULAR

CONTENT:

<u>Column Heading</u>	<u>Description</u>
TIME	Encounter time for unit contacting minefield.
UNIT	Name identification of unit encountering minefield.
LOCATION	UTM grid coordinate of unit contact with minefield.
TIME TO NEGOTIATE	Time duration reported for unit to complete negotiating minefield.
EFFECT	Description of unit losses attributed to the minefield event for units and vehicles (by type).
DISPLAY CRITERIA:	
TIME	<p>All data on minefield events shall be displayed for the entire history at an operator specified time range or, as a default, since the beginning of the history to the exercise time displayed on the Tactical Display at the time of the display request.</p> <p>The fixed portion of this format occupies one line per entry with effects on subsequent lines, with uninstrumented losses followed by instrumented losses by ID, for as many lines as necessary. The data is ordered by time.</p>
FORCE	The operator specifies whether the display is for BLUEFOR or OPFOR minefield events.

Figure 65. Minefield event summary (concluded).

1	1	2	3	4	5	6	7	8
	0	0	0	0	0	0	0	0

VEHICLE STATUS - SUMMARY DD MMM YY HH:MM

BLUEFOR		BATTLE	MAINT	ADMIN		OPFOR		BATTLE	MAINT	ADMIN	
VEHICLE	INIT	LOSS	LOSS	LOSS	OPER	VEHICLE	INIT	LOSS	LOSS	LOSS	OPER
TANK	NN	NN	NN	NN	NN	T-72	NN	NN	NN	NN	NN
APC						BMP					
TOW						BRDM-2					
VULCAN						MTLB					
JEEP						ISU23-4					
TRUCK						JEEP					
155 HOW						TRUCK					
REC VEH						122 HOW					
CEV											

Figure 66. Vehicle status - summary.

TITLE: Vehicle Status - Summary

DISPLAY TYPE: Tabular

CONTENT:

<u>Column Heading</u>	<u>Description</u>
VEHICLE	List of vehicle categories, as indicated on preceding page.
INIT	For each vehicle category, the number of uninstrumented operational vehicles, as defined at the beginning of the current exercise segment, for all BLUEFOR and OPFOR units (in accordance with operator input through the Exercise Segment Definition interactive menu).
BATTLE LOSS	For each vehicle category, the number recorded as lost due to battle action at the time specified in the display request.
MAINT LOSS	For each vehicle category, the number recorded as lost due to maintenance requirements at the time specified in the display request.
ADMIN LOSS	For each vehicle category the number recorded as lost due to administrative requirements at the time specified in the display request.
OPER	For each vehicle category, the total number of operational vehicles (i.e., INIT - BATTLE LOSS - MAINT LOSS - ADMIN LOSS - OPERATIONAL).

Figure 66. Vehicle status - summary (continued).

DISPLAY CRITERIA:

TIME

The display shall reflect the count of uninstrumented vehicles for all BLUEFOR and OPFOR units at an operator specified exercise time, or as a default, at the time displayed on the Tactical Display at the time of the display request.

NOTE: The operator specified time must be a time which is included in the current exercise segment.

Figure 66. Vehicle status -- summary (concluded).

Figure 67. Personnel status - unit.

TITLE: PERSONNEL STATUS - UNIT

DISPLAY TYPE: TABULAR

CONTENT:

<u>Column Heading</u>	<u>Description</u>
UNIT	Designation of unit.
INITIAL STRENGTH	The initial strength (i.e., number of 'active' personnel) of the named unit at the beginning of the current exercise segment (in accordance with operator input through the Exercise Segment Definition interactive menu).
WIA	For the named unit, the number of personnel recorded as wounded in action at the time specified in the display request.
KIA	For the named unit, the number of personnel recorded as killed in action at the time specified in the display request.
MIA	For the named unit, the number of personnel recorded as missing in action at the time specified in the display request.
CAPT'D	For the named unit, the number of personnel recorded as captured at the time specified in the display request.
CURRENT STRENGTH	For the named unit, the total number of active personnel line organized to that unit at the time specified in the display request (i.e., INITIAL - WIA - KIA - MIA - CAPTURED = CURRENT STRENGTH).

Figure 67. Personnel status - unit (continued).

CURRENT ATTACHED

The number of active personnel attached to the named unit as a result of unit task organization at the time specified in the display request.

NOTE: This number shall also account for any active personnel detached from the named unit as a result of unit task organization at the time specified in the display request.

DISPLAY CRITERIA:

TIME

The display shall reflect the personnel status for a specific unit at an operator specified exercise time or, as a default, at the exercise time as displayed on the Tactical Display at the time of the display request.

NOTE: The operator specified time must be a time which is included in the current exercise segment.

UNIT

The requestor specifies the unit for which personnel status data is desired. For **BLUEFOR:** the BM task force, companies A-D, cross-attached company, associated company components (i.e., plts, CP, FIST) or BM assets. For **OPFOR:** 1st, 2nd and 3rd Bns, companies 1-4 (for each of the three Bns), or associated company components i.e., plts and HQ).

Figure 67. Personnel status - unit (concluded).

	1	2	3	4	5	6	7	8
1	0	0	0	0	0	0	0	0

INTELLIGENCE LOG		DD MMM YY HH:MM - DD MMM YY HH:MM	
TIME OF	REPORTING	RECEIVING	
REPORT	UNIT	UNIT	
DDMMYYHHMM	XXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXX	CATEGORY
			XXXXXXXXXXXXXX
TYPE:XXXXXXXX	DESCRIPTION:XXXXXXXXXXXXXXXXXXXX		METHOD
			XXXXXX

Figure 68. Intelligence log.

TITLE: Intelligence Log

DISPLAY TYPE: Tabular

CONTENT:

Column Heading

Description

TIME OF REPORT

Indicates the time of the report.

REPORTING UNIT

Name of the unit making the report.

RECEIVING UNIT

Name of the unit receiving the intelligence report.

CATEGORY

Specifies the category of data. COMBAT INFOR indicates combat information and PROC INTEL indicates processed intelligence.

DETECTION METHOD

For Combat Information, indicates HUMINT for human intelligence, ELINT for electromagnetic intelligence or IMINT for imagery intelligence. This field not used for processed intelligence.

TYPE

For Combat Information, indicates FORCE for force detection, OBSTACLE for obstacle detection or WEATHER for weather data.

DESCRIPTION

For force detections indicates the type and number of equipment detected; for obstacle, indicates the type of obstacle detected, and for weather indicates the reported weather class. For Processed intelligence, indicates the suspected unit type and echelon.

Figure 68. Intelligence log (continued).

DISPLAY CRITERIA:

TIME

The display shall include all intelligence report data which was defined for the current exercise segment, up to the time of the display request, or for an operator defined time interval. The data will be ordered chronologically.

Figure 68. Intelligence log (concluded).

1	1	2	3	4	5	6	7	8
	0	0	0	0	0	0	0	0

RESOURCE ALLOCATION LOG

DD MM YY HH:MM - DD MM YY HH:MM

TIME	DONOR	LOCATION	RECIPIENT	LOCATION	MISSION
DD HH:MM	UNIT	UNIT	UNIT	UNIT	UNIT
XXXXXXX	XXXXXXXXXX	XXXXXXXXXX	XXXXXXXXXX	XXXXXXXXXX	XXXXXXXXXX
RESOURCE	XXXXXXXXXX	XXXXXXXXXX	XXXXXXXXXX	XXXXXXXXXX	XXXXXXXXXX
LEVEL	NNNN	NNNN	NNNN	NNNN	NNNN

Figure 69. Resource allocation log.

TITLE: RESOURCE ALLOCATION LOG

DISPLAY TYPE: TABULAR

CONTENT:

<u>Column Heading</u>	<u>Description</u>
TIME	The time the resource allocation request was made.
DONOR UNIT	The name of the unit supplying the resource(s).
LOCATION	The location of the unit supplying the resource(s).
RECIPIENT UNIT	The name of the unit to receive the resource(s).
LOCATION	The location of the unit to receive the resource(s).
MISSION	The name given to the supply mission by the operator.
RESOURCE	The type of resource(s) to be supplied (i.e., personnel, equipment, ammunition, fuel, or water).
LEVEL	The amount, number of units (i.e., rounds, gallons, etc.), of the resource to be transferred.
DISPLAY CRITERIA:	
TIME	The events shall be displayed for an operator specified time range or, as a default, since the beginning of the history to the exercise time as displayed on the Tactical Display at the time of the display request.

Figure 69. Resource allocation log (continued).

FORCE

The operator specifies whether
the display is for the BLUEFOR
or OPFOR Resource Allocation
Log.

Figure 69. Resource allocation log (concluded).

1	1	2	3	4	5	6	7	8
0	0	0	0	0	0	0	0	0

PRESCHEDULED EVENT LOG

DD MMM YY HH:MM - DD MMM YY HH:MM

TIME	ORIGIN	TYPE	CODE NAME
DD HH:MM	XXXXXXXXXXXXXXXXXXXXXXXXXXXX	XXXXXX	XXXXXXXXXXXXXXXXXXXX
	[ASSOCIATED TEXT MESSAGE]		
	[ASSOCIATED TEXT MESSAGE]		
	[ASSOCIATED TEXT MESSAGE]		

Figure 70. Prescheduled event log.

TITLE: PRESCHEDULED EVENT LOG

DISPLAY TYPE: TABULAR

CONTENT:

<u>Column Heading</u>	<u>Description</u>
TIME	The time the event was to be displayed to the operator.
ORIGIN	The controller station that entered the event.
TYPE	Identifies the event as one of "Command and Control" or "Intelligence".
CODE NAME	Designator assigned to the event as entered through the Prescheduled Event menu.
TEXT	The description of the event.
DISPLAY CRITERIA:	
TIME	The events shall be displayed for an operator specified time range or, as a default, since the beginning of the history to the exercise time as displayed on the Tactical Display at the time of the display request.
FORCE	The operator specifies whether the display is for the BLUEFOR or CFFOR Prescheduled Event Log.

Figure 70. Prescheduled event log (concluded).

- NBC Report Log

ECC controller NBC report input to the Nuclear/Chemical Log menu shall be available for display, as depicted in Figure 71.

- Nuclear Event Log

The Nuclear Event Log, as depicted in Figure 72, shall indicate the summary information about each nuclear event which has occurred. The status field of the display shall indicate whether the event was executed, cancelled, or not executed.

- Chemical Event Log

The Chemical Event Log, as depicted in Figure 73, shall indicate the summary information about each chemical event which has occurred. The status field of the display shall indicate whether the event was executed, cancelled, or not executed.

3.3.5 Interactive Display And Control Processing - All interactive data display and input/output control capabilities required for operators to monitor and control the brigade history shall be provided by this function. To facilitate operator training, the man-machine interface provided by this function shall be similar to that used by the NTC to support EMC/TAF operations.

The graphics tablet shall be the primary man-machine interface device. The graphics tablet layout is depicted in Figure 74.

The following modes of operation, selectable by graphics tablet buttons, shall be provided:

- Real-time mode
- Historian mode
- Edit AAR mode
- Run AAR mode

Each of the modes shall be mutually exclusive. In the real-time mode, the station tactical display shall reflect the current real-time state of the exercise. In historian mode, historian buttons shall be provided which allow random access to different past time periods of the exercise segment. The edit AAR mode shall provide the operator with

1	1	2	3	4	5	6	7	8
	0	0	0	0	0	0	0	0

NBC REPORT LOG DD MM YY HH:MM - DD MM YY HH:MM

NBC MISSION DATA

TIME	TRGT POINT	YIELD	BOB	WIND SPD/DIR	VISIBILITY	DOWNWIND DIST
DD HH:MM	AAANNNNNNNN	NNN	XXXXXXX	NN/NNN	NNNN	NN

NBC REPORTS

TIME	PRECEDENCE	CLASSIFICATION	FROM	TO	REPORT TYPE
DD HH:MM	AAAAAAAAA	AAAAAAAAA	XXX/XXXXXXXX	XXXXXXXXXXXX	NBC-1
	OBSERVER UTM: AAANNNNNNNN				
	DIRECTION OF ATTACK: NNN				
	DETOMATION DD HH:MM				
	(ATTACK UTM: AAANNNNNNNN)				
	MEANS OF DELIVERY: XXXXXXXX				
	TYPE OF BURST: XXXXXXXX				
DD HH:MM	AAAAAAAAA	AAAAAAAAA	XXXXXXXXXXXX	XXXXXXXXXXXX	REC-
	ATTACK UTM: AAANNNNNNNN				
	ESTIMATED YIELD: NNNN				
	(STRIKE SERIAL NUMBER: NNNN)				
	(DETOMATION DD HH:MM)				
	(TYPE OF BURST: XXXXXXXX)				
	(MEANS OF DELIVERY: XXXXXXXX)				
DD HH:MM	AAAAAAAAA	AAAAAAAAA	XXXXXXXXXXXX	XXXXXXXXXXXX	NBC-3
	DETOMATION DD HH:MM				
	ATTACK UTM: AAANNNNNNNN				
	EFFECTIVE WINDSPEED: NNNN				
	STRIKE SERIAL NUMBER: NNNN				
	DIRECTION TO RADIAL LINES: NNN				
DD HH:MM	AAAAAAAAA	AAAAAAAAA	XXXXXXXXXXXX	XXXXXXXXXXXX	NBC-4
	READING LOCATION: AAANNNNNNNN				
	DOSE RATE: NNNN				
	DOSE RATE DD HH:MM				
DD HH:MM	AAAAAAAAA	AAAAAAAAA	XXXXXXXXXXXX	XXXXXXXXXXXX	NBC-5
	STRIKE SERIAL NUMBER: NNNN				
	H+1 DD HH:MM				
	ESTIMATED CONTOUR REFERENCE DD HH:MM				
	(DECAY RATE: NNNN)				
	(CONTOUR LINES: UUUU VVVV WWW XXXX)				

Figure 71. NBC report log.

TITLE: NBC REPORT LOG

DISPLAY TYPE: TABULAR

CONTENT:

<u>Column Heading</u>	<u>Description</u>
PRECEDENCE	Specifies type of report. (FLASH/IMMEDIATE)
CLASSIFICATION	Specifies the security class.
FROM	Specifies unit that generated the report.
TO	Specifies unit that received the report.
CATEGORY	Specifies the type of report logged.
NBC-1 REPORT: OBSERVER	Specifies UTM of unit observing attack.
DIRECTION	Specifies direction of attack in degrees.
DETONATION	Specifies time of the detonation.
DELIVERY	Specifies the means of delivery.
BURST	Specifies the type of burst.
NBC-2 REPORT: ATTACK	Specifies UTM of attack.
YIELD	Specifies estimated yield.
NUMBER	Specifies strike serial number.

Figure 71. NBC report log (continued).

DETONATION	Specifies detonation time.
BURST	Specifies the type of burst.
DELIVERY	Specifies means of delivery.
NBC-3 REPORT: DETONATION	Specifies detonation time.
ATTACK	Specifies UTM of attack.
WINDSPEED	Specifies effective windspeed.
NUMBER	Specifies strike serial number.
DIRECTION	Specifies direction to radial lines.
NBC-4 REPORT: LOCATION	Specifies UTM of reading.
DOSE	Specifies dose rate.
DATE TIME GROUP	Specifies time of dose rate reading.
NBC-5 REPORT: NUMBER	Specifies strike serial number.
H+1 TIME GROUP	Specifies H+1 time.
CONTOUR TIME GROUP	Specifies estimated contour reference.
DECAY	Specifies decay rate.
LINES	Specifies 1000, 300, 100, and 20 rad/hour contour lines.

Figure 71. NBC report log (continued).

DISPLAY CRITERIA:

FORCE

The operator specifies whether the display is for BLUEFOR or OPPOR NBC reports.

TIME

The display shall reflect the reports logged at an operator specified time or as a default, at the time displayed on the Tactical Display at the time of the display request.

Figure 71. NBC report log (concluded).

1	1	2	3	4	5	6	7	8
	0	0	0	0	0	0	0	0

NUCLEAR EVENT LOG

DD MM YY HH:MM

TIME	FORCE	AGENT	TARGET	DELIVERY	STATUS
DD HH:MM	XXXXXX	XXXXXXXX	LOCATION	METHOD	XXXXXXXXXX
			XXXXXXXXXX	XXXXXXXX	

Figure 72. Nuclear event log.

TITLE: Nuclear Event Log

DISPLAY TYPE: Tabular

CONTENT:

<u>Column Heading</u>	<u>Description</u>
TIME	Scheduled time of burst for nuclear event as defined by operator in the interactive menu.
FORCE	Name of force initiating the nuclear event as defined by operator in the interactive menu.
TYPE	Type of nuclear burst (i.e., ground or air) as defined by operator in the interactive menu.
GROUND ZERO	Location of target in UTM coordinates for the nuclear event as defined by operator in the interactive menu.
YIELD	Weapon yield in KT as defined by operator in the interactive menu.
STATUS	The status of the nuclear event, i.e., cancelled, executed and not executed. Not executed nuclear events shall be scheduled events occurring in a null segment).
DISPLAY CRITERIA:	
TIME	All data on nuclear events shall be displayed for the entire history from the beginning of the history to the exercise time as displayed on the Tactical Display at the time of the display request.

Figure 72. Nuclear event log (concluded).

1	1	2	3	4	5	6	7	8
0	0	0	0	0	0	0	0	0

CHEMICAL EVENT LOG

DD MM YY HH:MM

TIME	FORCE	AGENT	TARGET	DELIVERY	STATUS
DD HH:MM	XXXXXX	XXXXXXXX	LOCATION	METHOD	XXXXXXXXXX
			XXXXXXXXXX	XXXXXXXXXX	

Figure 73. Chemical event log.

TITLE: Chemical Event Log

DISPLAY TYPE: Tabular

CONTENT:

<u>Column Heading</u>	<u>Description</u>
TIME	Scheduled time of event for chemical event as defined by operator in the interactive menu.
FORCE	Name of force initiating the chemical event as defined by operator in the interactive menu.
AGENT	Type of chemical agent (i.e., PNERVE, PBLISTER, NPNERVE, NPBLOOD) as defined by operator in the interactive menu.
TARGET LOCATION	Location of target in UTM coordinates for the chemical event as defined by operator in the interactive menu.
DELIVERY METHOD	Delivery method (i.e., ARTILLERY, AIR SPRAY, AIR BOMBS) as defined by operator in the interactive menu.
STATUS	The status of the chemical event, i.e., cancelled, executed and not executed. Chemical events not executed shall be scheduled events occurring in a null segment.
DISPLAY CRITERIA:	
TIME	All data on chemical events shall be displayed for the entire history from the beginning of the history to the exercise time as displayed on the Tactical Display at the time of the display request.

Figure 73. Chemical event log (concluded).

[illegible]

the capability of creating/editing a command file for use during an AAR. The run AAR mode shall read an AAR file and translate each command in the file into a request for execution.

3.3.5.1 Map Displays - The means to display and manipulate a color background map of the Ft. Irwin area, upon which tactical symbology is overlaid, shall be provided. The same flexibility currently provided in the 500 Player CIS system for displaying varying zoom levels shall be utilized. The means to show various combinations of the following map attributes shall be available:

- Mobility class or relief
- Sun position
- Roads/railroads
- Cities
- Hydrography
- Contours
- Grids
- Miscellaneous features, including:
 - Power stations,
 - Dams,
 - Tunnels,
 - Natural fords,
 - Improved fords,
 - Nature surfaced airfield/landing zone (AF/LZ), and
 - Improved surfaced AF/LZ.

3.3.5.2 Interactive Menus - The means to display master menus and interactive tactical/operational menus shall be provided. A standard interactive menu topology, which is compatible with that used by the EMC/TAF and CBS functions shall be utilized. This compatibility will assist in the training of operator personnel and improve the operational efficiency of data entered through either the color monitor

display or the alphanumeric support display.

A standard set of display primitives, as defined in the 500 Player CIS Requirements Design Specification shall be employed for implementation of the menu system. The means to make selections from lists, define static symbology on the digital map, enter numeric and alphanumeric data and terminate operations of the menu shall be provided. Cues to the operator shall be used to indicate the type of data that must be entered and shall provide feedback to the operator which indicates when a selection has been made.

The master menus shall be displayed over the entire background map display area on the tactical display (i.e., color monitor). Tactical/operational menus shall be provided using both tactical and support display capabilities.

3.3.5.2.1 Master Menus - Each master menu shall be displayed in a single color. Specifically, Master Menu 1 shall be displayed in blue and Master Menu 2 shall be displayed in red. Highlighting shall be employed to indicate when a function key is on (i.e., activated). A cursor, controlled by the graphic pen/tablet, shall be overlaid on the master menu displays to assist in function key selection.

3.3.5.2.2 Tactical/Operational Menus at Tactical Display -

The following tactical/operational menus shall be provided for interactive control of the ECC/TAF history:

- History Initialization/Termination

The capabilities to initialize and terminate a history shall be provided as depicted in Figure 75.

- Exercise Segment Definition

The ability to define a segment type and segment parameters shall be provided, as depicted in Figure 76.

- Exercise Segment Selection

The Exercise Segment Selection menu shall list by history, the possible segments available for monitoring or viewing. Figure 77 depicts the topology for this menu.

- Unit Definition

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
1	List	ACTION	INITIALIZE TERMINATE DELETE	Defines selection of action to be performed.
IF INITIALIZE:				
2	Alpha/Numeric Entry	ENTER HISTORY NAME	6 spaces to be filled in from Alpha/Numeric pad.	Specifies designator to be assigned to History.
3	List	ENTER SOURCE OF DATA FOR THE 1ST BATTALION	'SIMULATION' followed by a list of EMC/TAP histories.	Specifies whether the data for the 1st ECC battalion originates from the simulation data base or one of the EMC/TAP histories.
4	List	ENTER SOURCE OF DATA FOR THE 2ND BATTALION	'SIMULATION' followed by a list of EMC/TAP histories.	Specifies whether the data for the 2nd ECC battalion originates from the simulation data base or one of the EMC/TAP histories. Entry is optional.
5	List	ENTER SOURCE OF DATA FOR THE 3RD BATTALION	'SIMULATION' followed by a list of EMC/TAP histories.	Specifies whether the data for the 3rd ECC battalion originates from the simulation data base or one of the EMC/TAP histories. Entry is optional.
6	List	--- ---	IGNORE DONE	Specifies manner of entry completion.

Figure 75. Menu: History initialization/termination/deletion.

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
IF TERMINATE:				
2	List	HISTORY	List consisting of the names of the available history .	Defines selection of history to be terminated.
3	List	---	IGNORE DONE	Specifies manner of entry completion.
IF DELETE:				
2	List	HISTORY	List containing the names of all closed history .	Defines selection of history to be deleted.
3	List	---	IGNORE DONE	Specifies manner of entry completion.

Figure 75. Menu: History initialization/termination/deletion (concluded).

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
1	IList	HISTORY	List consisting of the names of the available histories.	Defines selection of history for which segments will be opened. Current segment (if any) will automatically be closed.
2	IList	ITYPE	NULL REAL	Defines menu display options.
IP NULL:				
3	IList	---	IGNORE DONE	Specifies manner of entry completion.
IP REAL:				
4	Numeric Entry	IDATE	6 spaces to be filled in from Numeric pad.	Specifies day/month/year of exercise segment.
5	IList	ITYPE	INCLUDE NUCLEAR CAPABILITIES EXCLUDE NUCLEAR CAPABILITIES	Specifies if nuclear capabilities are to be utilized.
IP INCLUDE NUCLEAR CAPABILITIES:				
6	IList	RADIATION/ CONTAMINATION ACCUMULATION	ACCUMULATE RADIATION FROM PREVIOUS SEGMENT DO NOT ACCUMULATE RADIATION FROM PREVIOUS SEGMENT	Specifies if radiation shall accumulate from previous exercise segment.

Figure 76. Menu: Exercise segment definition.

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
IF ACCUMULATE RADIATION FROM PREVIOUS SEGMENT:				
7	Numeric Entry	MULL SEGMENT TIME INTERVAL	3 spaces to be filled in from Numeric Pad.	Specifies length of time radiation/contamination will accumulate for pre- ceding null segment (in minutes from 6 to 599).
8	Numeric Entry	BLUEFOR SCENARIO #	2 spaces to be filled in from Numeric pad.	Specifies 2 digit code number of BLUEFOR scenario.
9	Numeric Entry	OPFOR SCENARIO #	2 spaces to be filled in from Numeric pad.	Specifies 2 digit code number of OPFOR scenario.
10	Numeric Entry	INTENSITY INDEX CODE	BLUE OPFOR ----- PLANNING TIME AVAIL FIRE SUPPORT ARTILLERY MORTAR NUCLEAR CHEMICAL BIOLOGICAL SMOKE AIR DEFENSE ENGINEER CW	Specifies intensity index code where: 1 - Low 2 - Medium 3 - High
11	Alpha/ Numeric Entry	KEY TRAINING OBJECTIVE CODE #	10 spaces to be filled in from Alpha/Numeric pad.	Specifies five 2 character codes.

Figure 76. Menu: Exercise segment definition (continued).

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
12	Numeric Entry	VISIBILITY CODE	1 space to be filled in from Numeric pad.	Specifies visibility code where: 1 - Clear 2 - Dust 3 - Fog 4 - Rain
13	Numeric Entry	DAY/NIGHT CODE	1 space to be filled in from Numeric pad.	Specifies day/night code where: 1 - Day 0 - Night
14	Alpha/Numeric Entry	Bn DESIGNATION	7 spaces to be filled in from Alpha/Numeric pad.	Specifies Battalion designation in format X-XXXXAA.
15	Numeric Entry	Bn DAY AT MTC	2 spaces to be filled in from Numeric pad.	Specifies number of days spent so far at MTC.
16	Numeric Entry	Bn TIMES THROUGH INDICATED SCENARIO	2 spaces to be filled in from Numeric pad.	Specifies number of times this unit has run through this scenario.
17	Alpha/Numeric Entry	ASSIGNED/ATTACHED UNITS	6 spaces to be filled in from Alpha/Numeric pad.	Specifies designation of assigned/attached units in format AAX-XXX. Up to 8 units may be identified.

Figure 76. Menu: Exercise segment definition (continued).

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
18	List	TYPE OF Bn OPERATION/MISSION CODE	01 Movement to contact 02 Hasty attack 03 Deliberate attack 04 Exploitation and pursuit 05 Reconnaissance in force 06 Raid 11 Defend in sector 12 Defend from a battle area 13 Delay in sector 14 Delay forward of a specified line for specified time 15 Disengagement 16 Counterattack	Specifies tactical mission assigned to Battalion for exercise segment.
19	List	Bn OPERATIONS MODIFIER CODE	01 Passage of lines 02 Hasty attack 03 Relief in place 04 Exploitation and pursuit 05 Road march 06 Occupation of assembly area	Specifies modification to Bn mission. Selection of modifier is optional.
20	List	SELECT UNIT FOR ASSIGNMENT OF COMPANY MISSION CODE	List of assigned/attached units previously identified for which Company operation/mission codes shall be defined.	Specifies unit for which Company mission codes shall be defined. Up to 8 units may be selected, with Company mission codes being requested for each selected unit. Selection of a unit is optional.
IF COMPANY MISSION CODES ARE ASSIGNED:				

Figure 76. Menu: Exercise segment definition (continued).

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
21	List	COMPANY MISSION ICODE	01 Movement to contact	Specifies tactical mission assigned to selected
			02 Hasty attack	Company for exercise
			03 Deliberate attack	Segment, Selection of
			04 Exploitation and pursuit	Company mission code is
			05 Raid	optional.
			11 Occupy a battle position	
			12 Hasty defense	
			13 Deliberate defense	
			14 Defend to retain a battle position	
			15 Hasty defense	
			16 Deliberate defense	
			17 Create and defend a strongpoint (deliberate defense)	
			21 Patrol operation	
22	List	COMPANY OPERATIONS IMODIFIER CODE	01 Passage of lines	Specifies modification to tactical mission of selected Company. Selection of modifier is optional.
			02 Hasty attack	Upon entry completion operator prompted to select next assigned/attached unit for assignment of company mission code. This procedure is repeated until all assigned/attached units have been assigned a company mission code or until the operator does not select an available assigned/attached unit for assignment of a company mission code.
			03 Relief in place	
			04 Exploitation and pursuit	
			05 Road march	
			06 Occupation of assembly area	

Figure 76. Menu: Exercise segment definition (continued).

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
23	List	STATISTICAL UNITS	List of all BLUEFOR and IOPFOR player units currently identified in system data base.	Specifies units for which statistics shall be collected/maintained during the exercise segment.
24	List	OC ASSESSMENT	"BLUEFOR" followed by a list of all BLUEFOR units (both player and no player) currently identified in system data base.	Specifies units for which OC assessor ID and EI number assignments are to be made.
25	Alpha/Numeric Entry	OC ID	3 spaces to contain entries from Alpha/Numeric pad.	Specifies ID of OC to perform assessment of BLUEFOR unit selected above.
26	Numeric Entry	EI NUMBERS	3 spaces to contain entries from Numeric pad.	Specifies EI numbers assigned to unit for later assessments. Up to 10 EI numbers may be assigned.
27	List	---	IGNORE DONE	Specifies manner of entry completion.
IIP COMPANY MISSION CODES ARE NOT ASSIGNED:				
21	List	STATISTICAL UNITS	List of all BLUEFOR and IOPFOR player units currently identified in system data base.	Specifies units for which statistics shall be collected/maintained during the exercise segment.

Figure 76. Menu: Exercise segment definition (continued).

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
22	List	IOC ASSESSMENT	"BLUEFOR" followed by a list of all BLUEFOR units (both IOC assessor ID and EI player and no player) currently identified in system data base.	Specifies units for which IOC assessor ID and EI number assignments are to be made.
23	Alpha/Numeric Entry	IOC ID	3 spaces to contain entries from Alpha/numeric pad.	Specifies ID of OC to perform assessment of BLUEFOR unit selected above.
24	Numeric Entry	EI NUMBERS	3 spaces to contain entries from Numeric pad.	Specifies EI numbers assigned to unit for later assessments. Up to 10 EI numbers may be assigned.
25	List	---	IGNORE IDONE	Specifies manner of entry completion.
IF DO NOT ACCUMULATE RADIATION FROM PREVIOUS SEGMENT:				
7	Numeric Entry	BLUEFOR SCENARIO #	2 spaces to be filled in from Numeric pad.	Specifies 2 digit code number of BLUEFOR scenario.
8	Numeric Entry	OPFOR SCENARIO #	2 spaces to be filled in from Numeric pad.	Specifies 2 digit code number of OPFOR scenario.

Figure 76. Menu: Exercise segment definition (continued).

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
9	Numeric Entry	INTENSITY INDEX CODE	BLUE PLANNING TIME AVAIL FINE SUPPORT ARTILLERY MORTAR NUCLEAR CHEMICAL BIOLOGICAL SMOKE AIR DEFENSE ENGINEER EM	Specifies intensity index code where: 1 = Low 2 = Medium 3 = High
10	Alpha/Numeric Entry	KEY TRAINING OBJECTIVE CODE	10 spaces to be filled in from Alpha/Numeric pad.	Specifies five 2 character codes.
11	Numeric Entry	VISIBILITY CODE	1 space to be filled in from Numeric pad.	Specifies visibility code where: 1 = Clear 2 = Dust 3 = Fog 4 = Rain
12	Numeric Entry	DAY/NIGHT CODE	1 space to be filled in from Numeric pad.	Specifies day/night code where: 1 = Day 0 = Night
13	Alpha/Numeric Entry	Bn DESIGNATION	7 spaces to be filled in from Alpha/Numeric pad.	Specifies Battalion designation in format X-XXXXAA.

Figure 76. Menu: Exercise segment definition (continued).

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
14	Numeric Entry	Bn DAY AT NTC	12 spaces to be filled in from Numeric pad.	Specifies number of days spent so far at NTC.
15	Numeric Entry	Bn TIMES THROUGH INDICATED SCENARIO	12 spaces to be filled in from Numeric pad.	Specifies number of times this unit has run through this scenario.
16	Alpha/Numeric Entry	ASSIGNED/ATTACHED UNITS	16 spaces to be filled in from Alpha/Numeric pad.	Specifies designation of assigned/attached units in format AAX-XXX. Up to 8 units may be identified.
17	List	TYPE OF Bn OPERATION/MISSION CODE	01 Movement to contact 02 Hasty attack 03 Deliberate attack 04 Exploitation and pursuit 05 Reconnaissance in force 06 Raid 11 Defend in sector 12 Defend from a battle area 13 Delay in sector 14 Delay forward of a specified line for specified time 15 Disengagement 16 Counterattack	Specifies tactical mission assigned to Battalion for exercise segment.
18	List	Bn OPERATIONS MODIFIER CODE	01 Passage of lines 02 Hasty attack 03 Relief in place 04 Exploitation and pursuit 05 Road march 06 Occupation of assembly area	Specifies modification to Bn mission. Selection of modifier is optional.

Figure 76. Menu: Exercise segment definition (continued).

DISPLAY GROUP	TYPES	TITLE	CONTENT	DESCRIPTION
19 List IF COMPANY MISSION CODES ARE ASSIGNED:	List	SELECT UNIT FOR ASSIGNMENT OF COMPANY MISSION CODE	List of assigned/attached units previously identified for which Company operation/mission codes shall be defined.	Specifies unit for which Company mission codes shall be defined. Up to 8 units may be selected, with Company mission codes being requested for each selected unit. Selection of a unit is optional.
		COMPANY MISSION CODE	<ul style="list-style-type: none"> 01 Movement to contact 02 Hasty attack 03 Deliberate attack 04 Exploitation and pursuit 05 Raid 11 Occupy a battle position 12 Hasty defense 13 Deliberate defense 14 Defend to retain a battle position 15 Hasty defense 16 Deliberate defense 17 Create and defend a strongpoint (deliberate defense) 21 Patrol operation 	Specifies tactical mission assigned to selected Company for exercise segment. Selection of company mission code is optional.

Figure 76. Menu: Exercise segment definition (continued).

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
21	List	COMPANY OPERATIONS MODIFIER CODE	101 Passage of lines 102 Hasty attack 103 Relief in place 104 Exploitation and pursuit 105 Road march 106 Occupation of assembly area	Specifies modification to tactical mission of selected Company. Selection of modifier is optional. Upon entry completion operator prompted to select next assigned/attached unit for assignment of company mission code. This procedure is repeated until all assigned/attached units have been assigned a company mission code or until the operator does not select an available assigned/attached unit for assignment of a company mission code.
22	List	STATISTICAL UNITS	List of all BLUEFOR and OPFOR player units currently identified in system data base.	Specifies units for which statistics shall be collected/maintained during the exercise segment.
23	List	IOC ASSESSMENT	"BLUEFOR" followed by a list of all BLUEFOR units (both player and no player) currently identified in system data base.	Specifies units for which IOC assessor ID and EI number assignments are to be made.
24	Alpha/Numeric Entry	IOC ID	3 spaces to contain entries from Alpha/Numeric pad.	Specifies ID of IOC to perform assessment of BLUEFOR unit selected above.
25	Numeric Entry	EI NUMBERS	3 spaces to contain entries from Numeric pad.	Specifies EI numbers assigned to unit for later assessments. Up to 10 EI numbers may be assigned.

Figure 76. Menu: Exercise segment definition (continued).

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
26	List	---	IGNORE DONE	Specifies manner of entry completion.
IF COMPANY MISSION CODES ARE NOT ASSIGNED:				
20	List	STATISTICAL UNITS	List of all BLUEFOR and OPFOR player units currently identified in system data base.	Specifies units for which statistics shall be collected/maintained during the exercise segment.
21	List	IOC ASSESSMENT	"BLUEFOR" followed by a list of all BLUEFOR units (both player and no player) currently identified in system data base.	Specifies units for which IOC assessor IO and EI number assignments are to be made.
22	Alpha/Numeric Entry	IOC ID	3 spaces to contain entries from Alpha/Numeric pad.	Specifies ID of IOC to perform assessment of BLUEFOR unit selected above.
23	Numeric Entry	EI NUMBERS	3 spaces to contain entries from Numeric pad.	Specifies EI numbers assigned to unit for later assessments. Up to 10 EI numbers may be assigned.
24	List	---	IGNORE DONE	Specifies manner of entry completion.
IF EXCLUDE NUCLEAR CAPABILITIES:				

Figure 76. Menu: Exercise segment definition (continued).

DISPLAY GROUP	TITLE	CONTENT	DESCRIPTION
6 Numeric Entry	BLUEFOR SCENARIO #	2 spaces to be filled in from Numeric pad.	Specifies 2 digit code number of BLUEFOR scenario.
7 Numeric Entry	OPFOR SCENARIO #	2 spaces to be filled in from Numeric pad.	Specifies 2 digit code number of OPFOR scenario.
8 Numeric Entry	INTENSITY INDEX CODE	BLUE OPPOR ----- PLANNING TIME AVAIL FIRE SUPPORT ARTILLERY MORTAR NUCLEAR CHEMICAL BIOLOGICAL SMOKE AIR DEFENSE ENGINEER EM	Specifies intensity index code where: 1 - Low 2 - Medium 3 - High
9 Alpha/Numeric Entry	KEY TRAINING OBJECTIVE CODE #	10 spaces to be filled in from Alpha/Numeric pad.	Specifies five 2 character codes.
10 Numeric Entry	VISIBILITY CODE	1 space to be filled in from Numeric pad.	Specifies visibility code where: 1 - Clear 2 - Dust 3 - Fog 4 - Rain

Figure 76. Menu: Exercise segment definition (continued).

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
11	Numeric Entry	DAY/NIGHT CODE	1 space to be filled in from Numeric pad.	Specifies day/night code where: 1 - Day 0 - Night
12	Alpha/Numeric Entry	Bn DESIGNATION	7 spaces to be filled in from Alpha/Numeric pad.	Specifies Battalion designation in format X-XXXXAA.
13	Numeric Entry	Bn DAY AT MTC	2 spaces to be filled in from Numeric pad.	Specifies number of days spent so far at MTC.
14	Numeric Entry	Bn TIMES THROUGH INDICATED SCENARIO	2 spaces to be filled in from Numeric pad.	Specifies number of times this unit has run through this scenario.
15	Alpha/Numeric Entry	ASSIGNED/ATTACHED UNITS	6 spaces to be filled in from Alpha/Numeric pad.	Specifies designation of assigned/attached units in format AA-XXX. Up to 6 units may be identified.
16	List	TYPE OF Bn OPERATION/MISSION CODE	01 Movement to contact 02 Hasty attack 03 Deliberate attack 04 Exploitation and pursuit 05 Reconnaissance in force 06 Raid 11 Defend in sector 12 Defend from a battle area 13 Delay in sector 14 Delay forward of a specified line for specified time 15 Disengagement 16 Counterattack	Specifies tactical mission assigned to Battalion for exercise segment.

Figure 76. Menu: Exercise segment definition (continued).

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
17	List	Bn OPERATIONS MODIFIER CODE	101 Passage of lines	Specifies modification to Bn mission. Selection of modifier is optional.
			102 Hasty attack	
			103 Relief in place	
			104 Exploitation and pursuit	
			105 Road march	
			106 Occupation of assembly area	
18	List	SELECT UNIT FOR ASSIGNMENT OF COMPANY MISSION CODE	List of assigned/attached units previously identified for which Company operation/mission codes shall be defined.	Specifies unit for which Company mission codes shall be defined. Up to 8 units may be selected, with Company mission codes being requested for each selected unit. Selection of a unit is optional.
19	List	COMPANY MISSION CODE	101 Movement to contact	Specifies tactical mission assigned to selected Company for exercise segment. Selection of Company mission code is optional.
			102 Hasty attack	
			103 Deliberate attack	
			104 Exploitation and pursuit	
			105 Raid	
			111 Occupy a battle position	
			112 Hasty defense	
			113 Deliberate defense	
			114 Defend to retain a battle position	
			115 Hasty defense	
			116 Deliberate defense	
			117 Create and defend a stronghold (deliberate defense)	
			121 Patrol operation	

Figure 76. Menu: Exercise segment definition (continued).

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
20	List	COMPANY OPERATIONS MODIFIER CODE	01 Passage of lines 02 Hasty attack 03 Relief in place 04 Exploitation and pursuit 05 Road march 06 Occupation of assembly area	Specifies modification to tactical mission of selected Company. Selection of modifier is optional. Upon entry completion operator prompted to select next assigned/attached unit for assignment of company mission code. This procedure is repeated until all assigned/attached units have been assigned a company mission code or until the operator does not select an available assigned/attached unit for assignment of a company mission code.
21	List	STATISTICAL UNITS	List of all BLUEFOR and OPFOR player units currently identified in system data base.	Specifies units for which statistics shall be collected/maintained during the exercise segment.
22	List	OC ASSESSMENT	"BLUEFOR" followed by a list of all BLUEFOR units (both player and no player) currently identified in system data base.	Specifies units for which OC assessor ID and number assignments are to be made.
23	Alpha/ Numeric Entry	OC ID	3 spaces to contain entries from Alpha/Numeric pad.	Specifies ID of OC to perform assessment of BLUEFOR unit selected above.

Figure 76. Menu: Exercise segment definition (continued).

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
24	Numeric Entry	EI NUMBERS	3 spaces to contain entries from Numeric pad.	Specifies EI numbers assigned to unit for later assessments. Up to 10 EI numbers may be assigned.
25	List	---	IGNORE DONE	Specifies manner of entry completion.
IP COMPANY MISSION CODES ARE NOT ASSIGNED:				
19	List	STATISTICAL UNITS	List of all BLUEFOR and OPFOR player units currently identified in system data base.	Specifies units for which statistics shall be collected/maintained during the exercise segment.
20	List	OC ASSESSMENT	"BLUEFOR" followed by a list of all BLUEFOR units (both player and no player) currently identified in system data base.	Specifies units for which OC assessor ID and EI number assignments are to be made.
21	Alpha/Numeric Entry	OC ID	3 spaces to contain entries from Alpha/Numeric pad.	Specifies ID of OC to perform assessment of BLUEFOR unit selected above.
22	Numeric Entry	EI NUMBERS	3 spaces to contain entries from Numeric pad.	Specifies EI numbers assigned to unit for later assessments. Up to 10 EI numbers may be assigned.
23	List	---	IGNORE DONE	Specifies manner of entry completion.

Figure 76. Menu: Exercise segment definition (concluded).

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
1	LIST	HISTORY	List containing the names of the available histories.	Defines selection of history.
2	LIST	SEGMENTS	List of segments comprising history selected above.	Defines selection of segment to be viewed/monitored.
3	LIST	---	IGNORE REPEAT DONE	Specifies manner of entry completion.

Figure 77. Menu: History segment selection.

The Unit Definition menu shall provide the capability of creating or editing unit information for the ECC/TAF notional units. The definition of units at the ECC/TAF station shall have no effect on the live ES or simulated units. Simulation units shall be created at the ECC history at initialization; however, the controller shall not have the capability of defining new simulation units during the history. Figure 78 depicts the topology of the menu.

- Task Organization

The task organization of the live and notional EMC/TAF units shall be transferred to the ECC/TAF history automatically and the initial task organization for the simulated and notional units shall be entered by the controller at initialization. Figure 79 defines the menu which shall be used to change the task organization of ECC/TAF simulated and notional units during the ECC/TAF history.

- Control Measures

The control measure menu input, as depicted in Figure 80, provides the means to enter the operational orders and battle plans provided to the Brigade and CPX battalions. Once defined, the display of control measures shall be controlled through a set of buttons on the Master Menus.

- Unit Position

The position of notional units may be interactively altered through the Unit Position menu, as depicted in Figure 81. The position of live EMC/TAF units and simulated units shall be provided by the appropriate EMC/TAF and simulation histories.

- Intelligence

The Intelligence interactive menu, depicted in Figure 82, allows the EMC/TAF operator to define the intelligence data reported to and received from the Brigade. The menu shall also provide the means to display the processed intelligence (i.e., suspected unit locations) reported by the battalion. All symbology created from the Intelligence menu shall be controlled by the Intelligence buttons on the BLUEFOR master menu. Entries made at the Intelligence menu shall also automatically be logged in the Intelligence Log.

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
1 IF CREATE UNIT:	List	ACTION	CREATE UNIT SYMBOL CHANGE UNIT SYMBOL	Defines selection of action to be performed.
2 IF BLUEFOR:	List	FORCE	BLUEFOR OPFOR	Specifies menu selection option.
3 Alpha/ Numeric Entry		DESIGNATOR (LINE ORGANIZATION)	15 spaces to be filled in from alpha/numeric pad.	Specifies designator and line organization for the unit.
4 List		TASK ORGANIZATION	"NONE" followed by list of units in accordance with the force selected above.	Specifies initial task organization.
5 List		UNIT SYMBOL	MECH INFANTRY ARMOR INFANTRY AIR DEFENSE ARTILLERY SELF-PROPELLED ARTILLERY ANTITANK ELECTRONIC WARFARE ARMY AVIATION AIRBORNE INFANTRY AIR CAVALRY CHEMICAL DEFENSE ARMORED CAVALRY ENGINEER MEDICAL SIGNAL TRANSPORTATION SUPPLY AND SERVICE	Specifies type of unit symbol.

Figure 78. Menu: Unit definition.

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
6	List	LOCATION	SPECIFY INITIAL LOCATION NO INITIAL LOCATION	Allows operator to select initial location of the unit.
IF SPECIFY INITIAL LOCATION:				
7	Area	SELECT LOCATION	---	Cursor position on map defines unit location.
8	List	---	IGNORE REPEAT DONE	Specifies manner of entry completion.
IF NO INITIAL LOCATION:				
8	List	---	IGNORE REPEAT DONE	Specifies manner of entry completion.
IF OFFOR:				
3	Alpha/ Numeric Entry	DESIGNATOR (LINE ORGANISATION)	15 spaces to be filled in from alpha/numeric pad.	Specifies designator and line organization for the unit.
4	List	TASK ORGANIZATION	'NONE' followed by list of units in accordance with the force selected above.	Specifies initial task organization.
5	List	UNIT SYMBOL	MOTORIZED RIFLE REGIMENT ARMOR INFANTRY AIR DEFENSE ARTILLERY SELF-PROPELLED ARTILLERY ANTITANK ELECTRONIC WARFARE	Specifies type of unit symbol.

Figure 78. Menu: Unit definition (continued).

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
			ARMY AVIATION AIRBORNE INFANTRY AIR CAVALRY CHEMICAL DEFENSE ARMORED CAVALRY ENGINEER MEDICAL SIGNAL TRANSPORTATION SUPPLY AND SERVICE	
6	List	LOCATION	SPECIFY INITIAL LOCATION NO INITIAL LOCATION	Allows operator to select initial location of the unit.
IF SPECIFY INITIAL LOCATION:				
7	Area	SELECT LOCATION	---	Cursor position on map defines unit location.
8	List	---	IGNORE REPEAT DONE	Specifies manner of entry completion.
IF NO INITIAL LOCATION:				
7	List	---	IGNORE REPEAT	Specifies manner of entry completion.
IF CHANGE UNIT SYMBOL:				
2	List	FORCE	BLUEFOR OPFOR	Defines menu display options.

Figure 78. Menu: Unit definition (continued).

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
IIF BLUEFOR:	List	UNIT	List of all displayable BLUEFOR units previously created by the operator.	Defines unit for which symbol will be changed.
		UNIT SYMBOL	MECH INFANTRY ARMOR INFANTRY ARTILLERY SELF-PROPELLED ARTILLERY ANTI-TANK ELECTRONIC WARFARE AIR DEFENSE ARMY AVIATION AIRBORNE INFANTRY AIR CAVALRY CHEMICAL DEFENSE ARMORED CAVALRY ENGINEER MEDICAL SIGNAL TRANSPORTATION SUPPLY AND SERVICE	Specifies new unit symbol.
IIF OPFOR:	List	---	IGNORE REPEAT DONE	Specifies manner of entry completion.
		UNIT	List of all displayable OPFOR units previously created by the operator.	Defines unit for which symbol will be changed.

Figure 78. Menu: Unit definition (continued).

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
4	List	UNIT SYMBOL	MOTORISED RIFLE ARMOR INFANTRY AIR DEFENSE ARTILLERY SELF-PROPELLED ARTILLERY ANTITANK ELECTRONIC WARFARE ARMY AVIATION AIRBORNE INFANTRY AIR CAVALRY CHEMICAL DEFENSE ARMORED CAVALRY ENGINEER MEDICAL SIGNAL TRANSPORTATION SUPPLY AND SERVICE	Specifies new unit symbol.
5	List	---	IGNORE REPEAT DONE	Specifies manner of entry completion.

Figure 78. Menu: Unit definition (concluded).

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
1	List	FORCE	BLUEFOR OPFOR	Defines menu display options.
2	List	TYPE	MOTIONAL SIMULATION	Specifies type of unit.
3	List	UNIT	List of BLUEFOR or OPFOR, MOTIONAL or SIMULATION, units, (in accordance with FORCE and TYPE above).	Defines selection of unit whose task organization shall be modified.
4	List	TASK ORGANISATION	"NONE" followed by a list of all BLUEFOR or OPFOR, MOTIONAL or SIMULATION, units previously created by the operator.	Defines selection of new task organization for specified unit.
5	List	---	IGNORE REPEAT DONE	Specifies manner of entry completion.

Figure 79. Menu: Task organization.

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
1	List	ACTION	ADD DELSTS	Defines action to be performed.
2	List	FORCE	BLUEFOR OPFOR WHITE	Defines menu display options.
IF BLUEFOR/ OPFOR ADD:				
3	List	TACTICAL CATEGORY	MANEUVER FIRE SUPPORT INTELLIGENCE MOBILITY/COUNTERMOBILITY COMBAT SERVICE SUPPORT AIR DEFENSE	Defines selection of functional tactical category of control measure. More than one tactical category may be selected.
4	List	ECHELON	IF BLUEFOR: PLT CO BN BDE IF OPFOR: PLT CO BN REGT	Defines selection of echelon of control measure.
5	List	TYPE	POINT LINE AREA	Defines selection of type of control measure.
IF POINT:				
6	List	CONTROL MEASURE	CHECKPOINT COORDINATION POINT START POINT RELEASE POINT PASSAGE POINT POINT OF DEPARTURE REMOTE SENSOR PREPLANNED TARGET RADIOLOGICAL MARKER CHEMICAL MARKER	Defines selection of point to be created.

Figure 80. Menu: Control measures.

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
IF CHECK POINT, COOR- DINATION POINT, START POINT, RELEASE POINT, PASSAGE POINT, POINT OF DEPAR- TURE, REMOTE SENSOR, PRE- PLANNED TAR- GET:	7 Alpha/ Numeric	CODE NAME	16 spaces to be filled in from Alpha/Numeric pad.	Specifies designator to be assigned to control measure. Entry of a name is optional.
	8 Area	CHOOSE POINT ON MAP	---	Cursor position on map defines selected point.
	9 List	---	IGNORE REPEAT DONE	Specifies manner of entry completion.
IF RADIOLOGICAL MARKER:				
7	Alpha/ Numeric	CODE NAME	16 spaces to be filled in from Alpha/Numeric pad.	Specifies designator to be assigned to control measure. Entry of a name is optional.
8	Numeric Entry	DOSE RATE	4 spaces to be filled in from Numeric pad.	Specifies dose rate of contamination in marked area.

Figure 80. Menu: Control measures (continued).

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
9	Numeric Entry	DATE	6 spaces to be filled in from Numeric pad.	Specifies date when marker is placed on field.
10	Numeric Entry	TIME	5 spaces to be filled in from Numeric pad.	Specifies time when marker is placed on field.
11	Numeric Entry	BURST DATE	6 spaces to be filled in from Numeric pad.	Specifies date when nuclear blast occurred.
12	Numeric Entry	BURST TIME	5 spaces to be filled in from Numeric pad.	Specifies time when nuclear blast occurred.
13	Area	CHOOSE POINT ON MAP	---	Cursor position on map defines selected point.
14	List	---	IGNORE REPEAT DONE	Specifies manner of entry completion.
IF CHEMICAL MARKER:				
7	Alpha/ Numeric Entry	CODE NAME	16 spaces to be filled in from Alpha/Numeric pad.	Specifies designator to be assigned to control measure. Entry of a name is optional.
8	List	AGENT	PERSISTENT NERVE PERSISTENT BLISTER NONPERSISTENT NERVE NONPERSISTENT BLOOD	Specifies reported type of agent employed.
9	Numeric Entry	DATE	6 spaces to be filled in from Numeric pad.	Specifies date when marker is placed on field.
10	Numeric Entry	TIME	5 spaces to be filled in from Numeric pad.	Specifies time when marker is placed on field.

Figure 80. Menu: Control measures (continued).

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
11	Area	CHOOSE POINT ON MAP	---	Cursor position on map defines selected point.
12	List	---	IGNORE REPEAT DONE	Specifies manner of entry completion.
IF LINE:				
6	List	CONTROL MEASURE	BASIC LINE AXIS OF ADVANCE PHASE LINE TANK DITCH CONCERTINA DIRECTION OF ATTACK/ROUTE BOUNDARY LINE TRACE OF FEBA FEBA LIMIT OF ADVANCE LINE OF DEPARTURE LD/LC PROBABLE LINE OF DEPLOYMENT FSCL RESTRICTIVE FIRE LINE COORDINATED FIRE LINE MAIN SUPPLY ROUTE PASSAGE LANE	Defines selection of line to be created.
IF BASIC LINE, TANK DITCH, PHASE LINE, AXIS OF ADVANCE, CONCERTINA, OR MAIN SUP- PLY ROUTE:				

Figure 80. Menu: Control measures (continued).

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
7	List	STATUS	CURRENT PROPOSED	Defines status of control measure.
8	Alpha/ Numeric Entry	CODE NAME	16 spaces to be filled in from Alpha/Numeric pad.	Specifies designator to be assigned to control measure. Entry of name is optional.
9	Area	CHOOSE TWO TO TWELVE POINTS ON MAP	---	Cursor positions on map define selected points.
10	List	---	IGNORE REPEAT DONE	Specifies manner of entry completion.
IF DIRECTION OF ATTACK/ ROUTE:				
7	List	STATUS	CURRENT PROPOSED	Defines status of control measure.
8	Alpha/ Numeric Entry	CODE NAME	16 spaces to be filled in from Alpha/Numeric pad.	Specifies designator to be assigned to control measure. Entry of name is optional.
9	Area	CHOOSE TWO TO TWELVE POINTS ON MAP. LAST POSITION INDICATES DIRECTION.	---	Cursor positions on map define selected points. Last position indicates direction.
10	List	---	IGNORE REPEAT DONE	Specifies manner of entry completion.

Figure 80. Menu: Control measures (continued).

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
IF BOUNDARY LINE:				
7	List	STATUS	CURRENT PROPOSED	Defines status of control measure.
8	List	UNIT DESIGNATION	A list of all BLUEFOR or OPFOR player units previously created by the operator.	Defines selection of unit designation associated with this control measure.
9	Area	CHOOSE TWO TO TWELVE POINTS ON MAP	---	Selection of unit designation is optional. Cursor positions on map define selected points.
10	List	---	IGNORE REPEAT DONE	Specifies manner of entry completion.

Figure 80. Menu: Control measures (continued).

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
IF TRACE OF FEBA, LIMIT OF ADVANCE, LINE OF DEPARTURE:	7 List	STATUS	CURRENT PROPOSID	Defines status of control measure.
	8 Area	CHOOSE TWO TO TWELVE POINTS ON MAP	---	Cursor positions on map define selected points.
	9 List	---	IGNORE REPEAT DONE	Specifies manner of entry completion.
IF LD/LC, FEBA, PASSAGE LANE, PROBABLE LINE OF DEPLOYMENT:	7 Area	CHOOSE TWO TO TWELVE POINTS ON MAP	---	Cursor positions on map define selected points.
	8 List	---	IGNORE REPEAT DONE	Specifies manner of entry completion.

Figure 80. Menu: Control measures (continued).

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
IF AREA:	6 List	CONTROL MEASURE	BASIC AREA AREA OF OPERATION ASSEMBLY AREA ATTACK POSITION DROP ZONE FIRE SUPPORT BASE LANDING ZONE PASS OBJECTIVE PATROL BASE PICKUP ZONE SCATTERABLE MINEFIELD SUPPORT AREA GROUP OF TARGETS RESTRICTIVE FIRE AREA NO FIRE AREA CONTAMINATED AREA BATTLE POSITION MINEFIELD GAP/BRIDGE	Defines area control measure to be created.

Figure 80. Menu: Control measures (continued).

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
IF BASIC AREA, CONTAMINATED AREA, AREA OF OPERATION, ATTACK POSITION, DROP IONE, FIRE SUPPORT BASE, LANDING IONE, OBJECTIVE, PATROL BASE, PICKUP IONE, SUPPORT AREA, BATTLE POSITION:				
7	List	STATUS	CURRENT PROPOSED	Defines status of control measure.
8	Alpha/Numeric Entry	CODE NAME	16 spaces to be filled in from Alpha/Numeric pad.	Specifies designator or name assigned to control measure. Entry of name is optional.
9	Area	CHOOSE UP TO TWELVE POINTS ON MAP	---	Cursor positions on map define selected points.

Figure 80. Menu: Control measures (continued).

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
IF ASSEMBLY AREA:	10 List	---	IGNORE REPEAT DONE	Specifies manner of entry completion.
	7 List	STATUS	CURRENT PROPOSED	Defines status of control measure.
	8 List	UNIT DESIGNATION	A list of all BLUEFOR or OPFOR player units previously created by the operator.	Defines selection of unit designation associated with this control measure. Selection of unit designation is optional.
9	Area	CHOOSE UP TO TWELVE POINTS ON MAP	---	Cursor positions on map define selected points.
IF FARP:	10 List	---	IGNORE REPEAT DONE	Specifies manner of entry completion.
	7 List	STATUS	CURRENT PROPOSED	Defines status of control measure.
	8 Area	CHOOSE UP TO TWELVE POINTS ON MAP	---	Cursor positions on map define selected points.
9	List	---	IGNORE REPEAT DONE	Specifies manner of entry completion.

Figure 80. Menu: Control measures (continued).

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
IF GROUP OF TARGETS:				
	7 List	STATUS	CURRENT PROPOSED	Defines status of control measure.
	8 Alpha/ Numeric Entry	CODE NAME	16 spaces to be filled in from Alpha/Numeric pad.	Specifies designator or name assigned to control measure. Entry of name is optional.
	9 Area	CHOOSE UP TO TWELVE POINTS ON MAP	---	Cursor positions on map define selected points.
IF RPA:	10 List	---	IGNORE REPEAT DONE	Specifies manner of entry completion.
	7 List	STATUS	CURRENT PROPOSED	Defines status of control measure.
	8 List	UNIT DESIGNATION	A list of all BLUEFOR or OPFOR player units previously created by the operator.	Defines selection of unit designation associated with this control measure. Selection of unit designation is optional.
	9 Alpha/ Numeric Entry	STARTING TIME	6 spaces to be filled in from Alpha/Numeric pad.	Specifies time the RPA becomes effective; in the format DDHHMM.
	10 Alpha/ Numeric Entry	ENDING TIME	6 spaces to be filled in from Alpha/Numeric pad.	Specifies time the RPA terminates; in the format DDHHMM.

Figure 80. Menu: Control measures (continued).

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
11	Area	CHOOSE UP TO TWELVE POINTS ON MAP	---	Cursor positions on map define selected points.
12	List	---	IGNORE REPEAT DONE	Specifies manner of entry completion.
IF NO FIRE AREA:				
7	List	STATUS	CURRENT PROPOSED	Defines status of control measure.
8	List	UNIT DESIGNATION	A list of all BLUEFOR or OPFOR player units previously created by the operator.	Defines selection of unit designation associated with this control measure.
9	Alpha/ Numeric Entry	DATE TIME GROUP	11 spaces to be filled in from Alpha/Numeric pad.	Specifies time of affect.
10	Area	CHOOSE UP TO TWELVE POINTS ON MAP	---	Cursor positions on map define selected points.
11	List	---	IGNORE REPEAT DONE	Specifies manner of entry completion.
IF SCATTERABLE MINEFIELD:				
7	List	STATUS	CURRENT PROPOSED	Defines selection of area to be created.

Figure 80. Menu: Control measures (continued).

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
8	Alpha/ Numeric Entry	DATE TIME GROUP	11 spaces to be filled in from Alpha/Numeric pad.	Specifies day, time, and month of mine self- destruct.
9	List	MINE TYPE	ANTITANK ANTIPERSONNEL MIXED	Determines mine symbols to be entered within boundaries.
10	Area	CHOOSE UP TO TWELVE POINTS ON MAP	---	Cursor positions on map define selected points.
11	List	---	IGNORE REPEAT DONE	Specifies manner of entry completion.
IF GAP/ BRIDGE:				
7	Area	CHOOSE UP TO SIX POINTS FOR FIRST SIDE OF GAP/BRIDGE	---	Specifies first side of gap/bridge.
8	Area	CHOOSE UP TO SIX POINTS FOR SECOND SIDE OF GAP/BRIDGE	---	Specifies second side of gap/bridge.
9	List	---	IGNORE REPEAT DONE	Specifies manner of entry completion.
IF MINEFIELD:				
7	List	STATUS	CURRENT PROPOSED	Defines status of area to be created.

Figure 80. Menu: Control measures (continued).

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
IF PSCL, RPL, CPL:	7	Alpha/ Numeric Entry	DATE TIME GROUP	11 spaces to be filled in from Alpha/Numeric pad.
	8	List	UNIT DESIGNATION	Defines selection of unit designation associated with the control measure. Selection of unit designation is optional.
	9	Area	CHOOSE UP TO TWELVE POINTS ON MAP	Cursor positions on map define selected points.
	10	List	--- --- IGNORE REPEAT DONE	Specifies manner of entry completion.

Figure 80. Menu: Control measures (continued).

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
8	Area	CHOOSE UP TO TWELVE POINTS ON MAP	---	Cursor positions on map define area.
9	List	---	IGNORE REPEAT DONE	Specifies manner of entry completion.
IF BLUEFOR/ OPFOR DELETE:				
3	List	TACTICAL CATEGORY	MANEUVER FIRE SUPPORT INTELLIGENCE MOBILITY/COUNTERMOBILITY COMBAT SERVICE SUPPORT AIR DEFENSE	Defines selection of functional tactical category of control measure to be deleted. Only one selection available.
4	List	ECHELON	IF BLUEFOR: PLT CO BN BDE IF OPFOR: PLT CO BN REGT	Defines selection of echelon of control measure to be deleted.
5	List	CONTROL MEASURE ID	List of control measure IDs, of all BLUEFOR/OPFOR control measures in system (in accordance with TACTICAL CATEGORY and ECHELON selections made above.)	Defines selection of control measures to be deleted. Multiple selections may be made.
6	List	---	IGNORE REPEAT DONE	Defines manner of entry completion.

Figure 80. Menu: Control measures (continued).

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
IF WHITE ADD; 3	List	TYPE	POINT LINE AREA	Defines selection of type of control measure.
IF POINT; 4	List	CONTROL MEASURE	CHECKPOINT COORDINATION POINT START POINT RELEASE POINT PASSAGE POINT POINT OF DEPARTURE REMOTE SENSOR PREPLANNED TARGET RADIOLOGICAL HAZARD CHEMICAL HAZARD	Defines selection of point to be created.
IF CHECK POINT, COOR- DINATION POINT, START POINT, RELEASE POINT, PASSAGE POINT, POINT OF DEPAR- TURE, REMOTE SENSOR, PRE- PLANNED TAR- GET;				

Figure 80. Menu: Control measures (continued).

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
5	Alpha/ Numeric	CODE NAME	16 spaces to be filled in from Alpha/Numeric pad.	Specifies designator to be assigned to control measure. Entry of a name is optional.
6	Area	CHOOSE POINT ON MAP	---	Cursor position on map defines selected point.
7	List	---	1/MORE REPEAT DONE	Specifies manner of entry completion.
IF RADIOLOGICAL MARKER:				
5	Alpha/ Numeric	CODE NAME	16 spaces to be filled in from Alpha/Numeric pad.	Specifies designator to be assigned to control measure. Entry of a name is optional.
6	Numeric Entry	DOSE RATE	4 spaces to be filled in from Numeric pad.	Specifies dose rate of contamination in marked area.
7	Numeric Entry	DATE	6 spaces to be filled in from Numeric pad.	Specifies date when marker is placed on field.
8	Numeric Entry	TIME	5 spaces to be filled in from Numeric pad.	Specifies time when marker is placed on field.
9	Numeric Entry	BURST DATE	6 spaces to be filled in from Numeric pad.	Specifies date when nuclear blast occurred.
10	Numeric Entry	BURST TIME	5 spaces to be filled in from Numeric pad.	Specifies time when nuclear blast occurred.
11	Area	CHOOSE POINT ON MAP	---	Cursor position on map defines selected point.

Figure 80. Menu: Control measures (Continued).

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
12	List	---	IGNORE REPEAT DONE	Specifies manner of entry completion.
IF CHEMICAL MARKER:				
5	Alpha/ Numeric Entry	CODE NAME	16 spaces to be filled in from Alpha/Numeric pad.	Specifies designator to be assigned to control measure. Entry of a name is optional.
6	List	AGENT	PERSIST? NERVE PERSIST? BLISTER NONPERSISTENT NERVE NONPERSISTENT BLOOD	Specifies reported type of agent employed.
7	Numeric Entry	DATE	6 spaces to be filled in from Numeric pad.	Specifies date when marker is placed on field.
8	Numeric Entry	TIME	5 spaces to be filled in from Numeric pad.	Specifies time when marker is placed on field.
9	Area	CHOOSE POINT ON MAP	---	Cursor position on map defines selected point.
10	List	---	IGNORE REPEAT DONE	Specifies manner of entry completion.
IF LINE:				
4	List	CONTROL MEASURES	BASIC LINE AXIS OF ADVANCE PHASE LINE	Defines selection of line to be created.

Figure 80. Menu: Control measures (continued).

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
IF BASIC LINE, TANK DITCH, PHASE LINE, AXIS OF ADVANCE, MAIN SUPPLY ROUTE:	5	List	TANK DITCH DIRECTION OF ATTACK/ROUTE BOUNDARY LINE TRACE OF FEBA FEBA LIMIT OF ADVANCE LINE OF DEPARTURE LD/LC PROBABLE LINE OF DEPLOYMENT FBCL RESTRICTIVE FIRE LINE COORDINATED FIRE LINE MAIN SUPPLY ROUTE PASSAGE LANE	Defines status of control measure.
	6	Alpha/ Numeric Entry	STATUS CODE NAME 16 spaces to be filled in from Alpha/Numeric pad.	Specifies designator to be assigned to control measure. Entry of the name is optional.
	7	Area	CHOOSE TWO TO TWELVE POINTS ON MAP --- ---	Cursor positions on map define selected points.

Figure 80. Menu: Control measures (continued).

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
4	List	---	IGNORE REPEAT DONE	Specifies manner of entry completion.
IF DIRECTION OF ATTACK/ ROUTE:				
5	List	STATUS	CURRENT PROPOSED	Defines status of control measure.
6	Alpha/ Numeric Entry	CODE NAME	16 spaces to be filled in from Alpha/Numeric pad.	Specifies designator to be assigned to control measure. Entry of name is optional.
7	Area	CHOOSE TWO TO TWELVE POINTS ON MAP. LAST POSITION INDICATES DIRECTION.	---	Cursor positions on map define selected points. Last position indicates direction.
8	List	---	IGNORE REPEAT DONE	Specifies manner of entry completion.

Figure 80. Menu: Control measures (continued).

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
IF BOUNDARY LINE:	5 List	STATUS	CURRENT PROPOSED	Defines status of control measure.
	6 List	UNIT DESIGNATION	A list of all BLUEFOR or OPFOR player units previously created by the operator.	Defines selection of unit designation associated with this control measure. Selection of unit designation is optional.
7	Area	CHOOSE TWO TO TWELVE POINTS ON MAP	---	Cursor positions on map define selected points.
8	List	---	IGNORE REPEAT DONE	Specifies manner of entry completion.
IF TRACE OF FEBA, LIMIT OF ADVANCE, LINE OF DEPARTURE:	5 List	STATUS	CURRENT PROPOSED	Defines status of control measure.

Figure 80. Menu: Control measures (continued).

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
6	Area	CHOOSE TWO TO TWELVE POINTS ON MAP	---	Cursor positions on map define selected points.
	List	---	IGNORE REPEAT DONE	Specifies manner of entry completion.
5	Area	CHOOSE TWO TO TWELVE POINTS ON MAP	---	Cursor positions on map define selected points.
	List	---	IGNORE REPEAT DONE	Specifies manner of entry completion.
5	Alpha/ Numeric Entry	DATE TIME GROUP	11 specs to be filled in from Alpha/Numeric pad.	Specifies time the line becomes effective.

Figure 80. Menu: Control measures (continued).

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
6	List	UNIT DESIGNATION	A list of all white player units previously created by the operator.	Defines selection of unit designation associated with the control measure. Selection of unit designation is optional.
7	Area	CHOOSE TWO TO TWELVE POINTS ON MAP	---	Cursor positions on map define selected points.
8	List	---	IGNORE REPEAT DONE	Specifies manner of entry completion.
IP AREA: 4	List	CONTROL MEASURE	BASIC AREA AREA OF OPERATION ASSEMBLY AREA ATTACK POSITION DROP ZONE FIRE SUPPORT BASE LANDING ZONE FARP OBJECTIVE PATROL BASE PICKUP ZONE SCATTERABLE MINEFIELD SUPPORT AREA GROUP OF TARGETS RESTRICTIVE FIRE AREA NO FIRE AREA CONTAMINATED AREA BATTLE POSITION MINEFIELD GAP/BRIDGE	Defines area control measure to be created.

Figure 80. Menu: Control measures (continued).

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
IF BASIC AREA, CONTAMINATED AREA, AREA OF OPERATION, ATTACK POSITION, DROP ZONE, FIRE SUPPORT BASE, LANDING ZONE, OBJECTIVE, PATROL BASE, PICKUP ZONE, SUPPORT AREA, BATTLE POSITION:				
5	List	STATUS	CURRENT PROPOSED	Defines status of control measure.
6	Alpha/ Numeric Entry	CODE NAME	16 spaces to be filled in from Alpha/Numeric pad.	Specifies designator name assigned to control measure. Entry of name is optional.
7	Area	CHOOSE UP TO TWELVE POINTS ON MAP	---	Cursor positions on map define selected points.

Figure 80. Menu: Control measures (continued).

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
IF ASSEMBLY AREA:	8 List	---	IGNORE REPEAT DONE	Specifies manner of entry completion.
	5 List	STATUS	CURRENT PROPOSED	Defines status of control measure.
	6 List	UNIT DESIGNATION	A list of all white player units previously created by the operator.	Defines selection of unit designation associated with this control measure. Selection of unit designation is optional.
IF FARP:	7 Area	CHOOSE UP TO TWELVE POINTS ON MAP	---	Cursor positions on map define selected points.
	8 List	---	IGNORE REPEAT DONE	Specifies manner of entry completion.
	5 List	STATUS	CURRENT PROPOSED	Defines status of control measure.
	6 Area	CHOOSE UP TO TWELVE POINTS ON MAP	---	Cursor positions on map define selected points.
	7 List	---	IGNORE REPEAT DONE	Specifies manner of entry completion.

Figure 80. Menu: Control measures (continued).

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
IF GROUP OF TARGETS:				
	5 List	STATUS	CURRENT PROPOSED	Defines status of control measure.
	6 Alpha/Numeric Entry	CODE NAME	16 spaces to be filled in from Alpha/Numeric pad.	Specifies designator or name assigned to control measure. Entry of name is optional.
	7 Area	CHOOSE UP TO TWELVE POINTS ON MAP	---	Cursor positions on map define selected points.
IF RPA:	8 List	---	IGNORE REPEAT DONE	Specifies manner of entry completion.
	5 List	STATUS	CURRENT PROPOSED	Defines status of control measure.
	6 List	UNIT DESIGNATION	A list of all white player units previously created by the operator.	Defines selection of unit designation associated with this control measure. Selection of unit designation is optional.
	7 Alpha/Numeric Entry	STARTING TIME	6 spaces to be filled in from Alpha/Numeric pad.	Specifies time the RPA becomes effective; in the format DDHHMM.

Figure 80. Menu: Control measures (continued).

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
8	Alpha/ Numeric Entry	ENDING TIME	6 spaces to be filled in from Alpha/Numeric pad.	Specifies time the RPA terminates; in the format DDHHMM.
9	Area	CHOOSE UP TO TWELVE POINTS ON MAP	---	Cursor positions on map define selected points.
10	List	---	IGNORE REPEAT DONE	Specifies manner of entry completion.
IF NO FIRE AREA:				
5	List	STATUS	CURRENT PROPOSED	Defines status of control measure.
6	List	UNIT DESIGNATION	A list of all white player units previously created by the operator.	Defines selection of unit designation associated with this control measure.
7	Alpha/ Numeric Entry	DATE TIME GROUP	11 spaces to be filled in from Alpha/Numeric pad.	Specifies time of effect.
8	Area	CHOOSE UP TO TWELVE POINTS ON MAP	---	Cursor positions on map define selected points.
9	List	---	IGNORE REPEAT DONE	Specifies manner of entry completion.
IF SCATTERABLE MINEFIELD:				
5	Area	STATUS	CURRENT PROPOSED	Defines selection of area to be created.

Figure 80. Menu: Control measures (continued).

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
6	Alpha/ Numeric Entry	DATE TIME GROUP	11 spaces to be filled in from Alpha/Numeric pad.	Specifies day, time, and month of mine self- destruct.
7	List	MINE TYPE	ANTITANK ANTIPERSONNEL	Determines mine symbols to be entered within boundaries.
8	Area	CHOOSE UP TO TWELVE POINTS ON MAP	---	Cursor positions on map define selected points.
9	List	---	IGNORE REPEAT DONE	Specifies manner of entry completion.
IF GAP/ BRIDGE:	5	CHOOSE UP TO SIX POINTS FOR FIRST SIDE OF GAP/BRIDGE	---	Cursor positions on map specify first side of gap/bridge.
	6	CHOOSE UP TO SIX POINTS FOR SECOND SIDE OF GAP/BRIDGE	---	Cursor positions on map specify second side of gap/bridge.
IF MINEFIELD:	7	---	IGNORE REPEAT DONE	Specifies manner of entry completion.
	5	STATUS	CURRENT PROPOSED	Defines status of area to be created.

Figure 80. Menu: Control measures (continued).

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
6	Area	CHOOSE UP TO TWELVE POINTS ON MAP	---	Cursor positions on map define area.
7	List	---	IGNORE REPEAT DONE	Specifies manner of completion.
IF WHITE DELETE: 3	List	CONTROL MEASURE ID	List of control measure IDs of all white control measures.	Defines selection of control measure to be deleted. Multiple selections may be made.
4	List	---	IGNORE REPEAT DONE	Defines manner of entry completion.

Figure 80. Menu: Control measures (concluded).

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
1	List	FORCE	BLUEFOR OPFOR	Defines menu display option.
2	List	UNIT	List of BLUEFOR or OPFOR notional units (in accordance with FORCE selection made above).	Defines selection of notional unit to be positioned.
3	Area	SELECT POSITION ON MAP	---	Cursor position on map defines unit position.
4	List	---	IGNORE REPEAT IDONE	Specifies manner of entry completion.

Figure 81. Menu: Unit position.

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
1	List	REPORTING UNIT	List of BLUEFOR notional, ES, and simulation units.	Defines unit reporting intelligence data.
2	List	RECEIVING UNIT	List of BLUEFOR notional, ES, and simulation units.	Defines unit receiving intelligence data.
3	Alpha/Numeric Entry	TIME OF REPORT	11 spaces to be filled in from Alpha/Numeric pad.	Specifies time of intel report.
4	List	CATEGORY	COMBAT INFORMATION PROCESSED INTELLIGENCE	Defines menu display options.
IF COMBAT INFORMATION:				
5	List	DETECTION METHOD	HUMAN ELECTROMAGNETIC IMAGERY	Defines method used for collecting intelligence data.
6	List	TYPE	FORCE DETECTION OBSTACLE DETECTION WEATHER DATA	Defines type of combat information.
IF FORCE DETECTION:				
7	List	EQUIPMENT/TROOPS	TANK ANTITANK APC TRUCK INDIRECT FIRE AIR DEFENSE HELICOPTER HIGH PERFORMANCE AIRCRAFT SENSORS FOOTSOLDIER	Specifies type of equipment detected.

Figure 82. Menu: Intelligence.

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
8	Numeric Entry	NUMBER	2 spaces to be filled in from numeric pad.	Specifies number of pieces of equipment detected.
9	Cluster	ENTER POINTS ON MAP	---	Specifies location of detected force equipment. Operator can enter as many points as specified in NUMBER, above.
10	List	---	IGNORE REPEAT	Specifies manner of entry completion.
IF OBSTACLE DETECTION:	7	List	TYPE GENERAL MASS CONCENTINA PIED WALL DITCH MINEFIELD CRATER FIELD	Specifies type of detected obstacle.
	8	Area	CHOOSE UP TO 12 POINTS ON MAP	Cursor positions define reported location of obstacle.
	9	List	---	Specifies manner of entry completion.
	IF WEATHER DATA:		IGNORE REPEAT DONE	
7	List	WEATHER CLASS	CLEAR OVERCAST HAZE RAIN FOG OR DUST	Specifies type of weather reported.

Figure 82. Menu: Intelligence (continued)

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
8	AREA	ENTER POINT ON MAP	---	Defines origin of weather report.
9	List	---	IGNORE REPEAT DONE	Defines method of entry completion.
IF PROCESSED INTELLIGENCE:				
5	List	SUSPECTED UNIT TYPE	MECH INFANTRY ARMOR INFANTRY AIR DEFENSE ARTILLERY SELF-PROPELLED ARTILLERY ANTITANK ELECTRONIC WARFARE ARMY AVIATION AIRBORNE INFANTRY AIR CAVALRY CHEMICAL DEFENSE ARMORED CAVALRY ENGINEER MEDICAL SIGNAL TRANSPORTATION SUPPLY AND SERVICE	
6	List	SUSPECTED ECHELON	REGIMENT BATTALION COMPANY PLATOON	Specifies suspected echelon on unit. Entry is optional.
7	AREA	SUSPECTED UNIT LOCATION	---	Cursor location indicates suspected location of unit.
8	List	---	IGNORE REPEAT DONE	Specifies manner of entry completion.

Figure 82. Menu: Intelligence (concluded).

3.3.5.2.3 Tactical/Operational Menus at Support Display - Menu input on the support display shall be accomplished through the use of operator cues and prompts. The tactical/operational menus to be provided on the ECC/TAF support display shall include:

- Prescheduled Event Definition

Prescheduled events shall be entered in the same manner as free format messages, as shown in Figure 83. They shall include command and control cues and intelligence cues. The operator shall specify the time the message is to be played during the exercise. Messages may be entered in a segment, and replayed to the controller in the same or a subsequent segment only.

- Resource Allocation

The resource allocation menu shall be used to log the movement of resources from one unit to another. The menu will display the current levels of resources for the selected units providing and receiving supplies. The execution of the menu shall result in the automatic decrement of supplies in the donor unit and increment of supplies to the recipient unit (Figure 84).

- Nuclear/Chemical Reports Log

This menu shall allow the ECC/TAF controller to record the NBC-1 and NBC-4 reports sent from the Brigade to the Division and the NBC-2, NBC-3, and NBC-5 reports generated by the Division and passed to the Brigade. These reports shall be passed via normal communication channels for the live EMC/TAF and simulated histories. The format of the menu is provided in Figure 85.

- Nuclear Event Definition

The Nuclear Event Definition menu, as depicted in Figure 86, shall provide the means for the ECC/TAF controller to define, change, or cancel nuclear events. The definition of a nuclear event at an ECC/TAF station shall cause the same event to occur in all histories and in the simulation.

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
1	List	FORCE	BLUEFOR OPFOR	Defines force initiating event.
2	List	TACTICAL CATEGORY	COMMAND AND CONTROL INTELLIGENCE	Defines prescheduled event operation.
3	List	ACTION	DEFINE EDIT CANCEL	Defines menu display options.
IF DEFINE OR EDIT:				
4	Alpha/ Numeric Entry	CODE NAME	16 spaces to be filled in from alpha/numeric keypad.	Specifies designator or name assigned to event.
5	Alpha/ Numeric Entry	MESSAGE	Maximum 3 lines of 80 characters each to be filled in from alpha/numeric keypad.	Prompt to be displayed to controller.
6	Alpha/ Numeric Entry	EVENT TIME	11 spaces to be filled in from the alpha/numeric pad.	Specifies time the event is to occur.
7	List	--- ---	IGNORE REPEAT DONE	Specifies manner of entry completion.
IF DELETE:				
4	Alpha/ Numeric Entry	CODE NAME	16 spaces to be filled in from the alpha/numeric pad.	Specifies event to be deleted.

Figure 83. Menu: Prescheduled event definition.

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
5	List	---	IGNORE REPEAT DONE	Specifies manner of entry completion.

Figure 83. Menu: Prescheduled event definition (concluded).

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
1	List	FORCE	BLUEFOR OPFOR	Defines force initiating event.
2	List	ACTION	ADD DELETE	Defines menu display options.
3	Alpha/ Numeric ENTRY	CODE NAME	8 spaces to be filled in from the Alpha Numeric pad	Specifies designator or name assigned to supply mission.
IF DELETE: 4	List	CODE NAME	List of supply missions.	Specifies supply mission to delete.
5	List	---	IGNORE REPEAT DONE	Specifies manner of entry completion.
IF ADD: 4	List	SOURCE	List of units for force specified in 1 above.	Specifies unit providing supplies.
5	List	DESTINATION	List of units for force specified in 1 above.	Specifies unit to receive supplies.
6	Alpha/ Numeric ENTRY	DATE TIME GROUP	11 spaces to be filled in from Alpha Numeric pad	Specifies time the supply was requested.
7	List	RESOURCE	PERSONNEL EQUIPMENT AMMO FUEL WATER	Specifies resource to transfer.
IF PERSONNEL: 8	List	PERSONNEL	List personnel in source unit	Specifies personnel to remove from source unit.

Figure 84. Menu: Resource allocation.

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
9	Numeric Pad	LEVEL	3 spaces to be filled in from the numeric pad.	Specify number of personnel per echelon.
10	List	---	IGNORE	Specifies manner of entry
			REPEAT	Completion.
			DONE	
IF EQUIPMENT:				
8	List	EQUIPMENT	List equipment in source unit	Specifies equipment to transfer.
9	Numeric Pad	LEVEL	3 spaces to be filled in from the numeric pad.	Specify number of pieces to transfer.
10	List	---	IGNORE	Specifies manner of entry
			REPEAT	Completion.
			DONE	
IF AMMO:				
8	List	AMMO	List ammo in source unit	Specifies ammo to transfer.
9	Numeric Pad	LEVEL	4 spaces to be filled in from the numeric pad.	Specify number of rounds to transfer.
10	List	---	IGNORE	Specifies manner of entry
			REPEAT	Completion.
			DONE	
IF FUEL:				
8	List	FUEL	List of fuel source unit (gas, diesel)	Specifies type of fuel to transfer.
			REPEAT	Completion.
			DONE	

Figure 84. Menu: Resource allocation (continued).

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
9	Numeric Pad	LEVEL	14 spaces to be filled in from the numeric pad.	Specify amount of fuel to transfer.
10	List	---	IGNORE	Specifies manner of entry
			REPEAT	Completion.
			DONE	
IF WATER: 8	List	WATER LEVEL	List number of gallons of water available for transfer.	Specify amount of water to transfer.
9	Numeric Pad	LEVEL	14 spaces to be filled in from the numeric pad.	Specify number of gallons to transfer.
10	List	---	IGNORE	Specifies manner of entry
			REPEAT	Completion.
			DONE	

Figure 84. Menu: Resource allocation (concluded).

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
1	List	FORCE	BLUEFOR OPFOR	Defines force receiving report.
2	List	CATEGORY	NBC-1 REPORT NBC-2 REPORT NBC-3 REPORT NBC-4 REPORT NBC-5 REPORT	Specifies the type of log item to be entered.
3	Alpha/ Numeric Entry	TIME OF REPORT	11 spaces to be filled in from the Alpha/Numeric pad.	Specifies time of the NBC report.
4	List	PRECEDENCE	FLASH IMMEDIATE	Specifies precedence of the report.
5	List	SENDING UNIT	List of BLUEFOR or OPFOR units in accordance with selection above.	Specifies unit that generated the report.
6	List	RECEIVING UNIT	List of BLUEFOR or OPFOR units in accordance with selection above.	Specifies unit that received the report.
IF NBC-1: 7	Alpha/ Numeric Entry	OBSERVER LOCATION	11 spaces to be filled in from the Alpha/Numeric pad.	Specifies location of unit observing attack, in UTM coordinates.
8	Alpha/ Numeric Entry	DIRECTION OF ATTACK	3 spaces to be filled in from the Alpha/Numeric pad.	Specifies reported direction of attack in degrees. Entry is optional.
9	Alpha/ Numeric Entry	TIME OF BURST	11 spaces to be filled in from the Alpha/Numeric pad.	Specifies reported time of detonation.

Figure 85. Menu: Nuclear/chemical report log.

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
10	Alpha/ Numeric Entry	DELIVERY METHOD	8 spaces to be filled in from the Alpha/Numeric pad.	Specifies the reported means of delivery.
11	List	TYPE OF BURST	SURFACE AIR	Specifies the reported type of burst.
12	List	---	IGNORE REPEAT DONE	Specifies manner of entry completion.
IF NBC-2: 7	Alpha/ Numeric Entry	GROUND ZERO	11 spaces to be filled in from the Alpha/Numeric pad.	Specifies the reported location of the burst, in UTM coordinates.
8	Alpha/ Numeric Entry	YIELD	4 spaces to be filled in from the Alpha/Numeric pad.	Specifies reported yield.
9	Alpha/ Numeric Entry	STRIKE SERIAL NUMBER	4 spaces to be filled in from the Alpha/Numeric pad.	Specifies reported strike serial number. Entry is optional.
10	Alpha/ Numeric Entry	TIME OF BURST	11 spaces to be filled in from the Alpha/Numeric pad.	Specifies reported burst time. Entry is optional.
11	List	TYPE OF BURST	SURFACE AIR	Specifies the reported type of burst. Entry is optional.
12	List	---	IGNORE REPEAT DONE	Specifies manner of entry completion.
IF NBC-3: 7	Alpha/ Numeric Entry	TIME OF BURST	11 spaces to be filled in from the Alpha/Numeric pad.	Specifies reported burst time. Entry is optional.

Figure 85. Menu: Nuclear/chemical report log (continued).

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
8	Alpha/ Numeric Entry	GROUND ZERO	11 spaces to be filled in from the Alpha/Numeric pad.	Specifies reported location of a burst, in UTM coordinates.
9	Alpha/ Numeric Entry	WINDSPEED	3 spaces to be filled in from the Alpha/Numeric pad.	Specifies reported windspeed.
10	Alpha/ Numeric Entry	STRIKE SERIAL NUMBER	4 spaces to be filled in from the Alpha/Numeric pad.	Specifies reported strike serial number.
11	Alpha/ Numeric Entry	DIRECTION TO RADIAL LINES	3 spaces to be filled in from the Alpha/Numeric pad.	Specifies reported direction to radial lines.
12	List	--- ---	IGNORE REPEAT DONE	Specifies manner of entry completion.
IF NBC-4: 7	Alpha/ Numeric Entry	READING LOCATION	11 spaces to be filled in from the Alpha/Numeric pad.	Specifies location of reading in UTM coordinates.
8	Alpha/ Numeric Entry	DOSE RATE	4 spaces to be filled in	Specifies reported dose rate.
9	Alpha/ Numeric Entry	TIME OF READING	11 spaces to be filled in from the Alpha/Numeric pad.	Specifies reported time of dose rate reading.
10	List	--- ---	IGNORE REPEAT DONE	Specifies manner of entry completion.

Figure 85. Menu: Nuclear/chemical report log (continued).

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
IP NBC-5; 7	Alpha/ Numeric Entry	STRIKE SERIAL NUMBER	4 spaces to be filled in from the Alpha/Numeric pad.	Specifies strike serial number.
8	Alpha/ Numeric Entry	H+1 TIME GROUP	11 spaces to be filled in from the Alpha/Numeric pad.	Specifies reported H+1 time.
9	Alpha/ Numeric Entry	CONTOUR TIME GROUP	11 spaces to be filled in from the Alpha/Numeric pad.	Specifies estimated contour reference.
10	Alpha/ Numeric Entry	DECAY RATE	4 spaces to be filled in from the Alpha/Numeric pad.	Specifies reported decay rate. Entry is optional.
11	Alpha/ Numeric Entry	1000 RAD/HR CONTOUR LINE	4 spaces to be filled in from the Alpha/Numeric pad.	Specifies 1000 rad/hour contour line. Entry is optional.
12	Alpha/ Numeric Entry	300 RAD/HR CONTOUR LINE	4 spaces to be filled in from the Alpha/Numeric pad.	Specifies 300 rad/hour contour line. Entry is optional.
13	Alpha/ Numeric Entry	100 RAD/HR CONTOUR LINE	4 spaces to be filled in from the Alpha/Numeric pad.	Specifies 100 rad/hour contour line. Entry is optional.
14	Alpha/ Numeric Entry	20 RAD/HR CONTOUR LINE	4 spaces to be filled in from the Alpha/Numeric pad.	Specifies 20 rad/hour contour line. Entry is optional.
15	List	---	IGNORE REPEAT DONE	Specifies manner of entry completion.

Figure 85. Menu: Nuclear/chemical report log (concluded).

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
1	List	FORCE	BLUEFOR OPFOR	Defines force initiating the nuclear event.
2	List	ACTION	DEFINE NUCLEAR MISSION EDIT NUCLEAR MISSION CANCEL NUCLEAR MISSION	Defines menu display options. Only 10 nuclear events may be defined; 3 of which may produce fallout. If additional events are entered they will not be processed.
IF DEFINE NUCLEAR MISSION:				
3	Alpha/ Numeric Entry	TIME	DD MON YR -- -- (current date displayed for edit (if required) followed by 4 spaces to be filled in with HH:MM values).	Specifies execution date and time of nuclear event.
4	Alpha/ Numeric Entry	TARGET POINT	10 spaces to be filled in from alpha/numeric pad.	Specifies UTM coordinate of target.
5	Numeric Entry	YIELD	0.2 KT 1 KT 2 KT 3 KT 5 KT 8 KT 10 KT 20 KT 50 KT 100 KT	Specifies the yield of weapon package.

Figure 86. Menu: Nuclear event definition.

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
6	Numeric Entry	HEIGHT OF BURST	SURFACE AIR	Specifies whether the burst will produce fallout. Only 3 ground bursts may be entered. If more than 3 are entered, only the first 3 will be executed.
7	Alpha/ Numeric Entry	WIND SPEED	3 spaces to be filled in from numeric pad.	Specifies the wind speed in KM/HR. Default set to 20 KM/HR.
8	List	WIND DIRECTION	3 spaces to be filled in from numeric pad.	Specifies the wind direction in degrees (valid range 1 to 360).
9	Numeric Entry	VISIBILITY	4 spaces to be filled in from numeric pad.	Specifies the visibility in kilometers.
10	Numeric Entry	DOWNWIND DISTANCE TO ZONE 1	2 spaces to be filled in from numeric pad.	Specifies the downwind distance to zone 1, in kilometers. Used to create fallout prediction display.
11	List	--- ---	IGNORE REPEAT DONE	Specifies manner of entry completion.

Figure 86. Menu: Nuclear event definition (continued).

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
IF EDIT NUCLEAR MISSION: 3	List	NUCLEAR MISSION	List of nuclear missions previously defined.	Defines selection of nuclear mission to be updated/modified. Missions shall be identified by time, yield, and ground zero. NOTE: Upon selection of mission, all parameters describing the nuclear mission are displayed for review.
IF CANCEL NUCLEAR MISSION: 3	List	NUCLEAR MISSION	List of nuclear missions previously defined.	Defines selection of nuclear mission to be cancelled. Missions shall be identified by time, yield, and ground zero.
4	List	---	IGNORE REPEAT DONE	Specifies manner of entry completion.

Figure 86. Menu: Nuclear event definition (concluded).

- Chemical Event Definition

The Chemical Event Definition menu, as shown in Figure 87, shall provide the means for the ECC/TAF controller to define, change or cancel chemical events.

- Decontamination

The Decontamination menu shall provide the ECC/TAF controller with the means of specifying that notional units have undergone Decontamination. The format of the menu is depicted in Figure 88.

- Vehicle Status

The Vehicle Status menu, as shown in Figure 89, shall provide allow the ECC/TAF controller to maintain statistics on the number of vehicles associated with notional units.

- Personnel Status

The Personnel Status menu shall provide the ECC/TAF controller with the means of maintaining statistics on the number and status of personnel associated with notional units. The format of the menu is depicted in Figure 90.

3.3.5.3 Tactical Symbolology - The following types of dynamic and static tactical symbolology shall be displayable over the background map:

- Unit symbol in FM 21-30 format
- Control measures
- Engagement vectors
- Prompt nuclear effects display
- Nuclear radiation contours
- Chemically contaminated areas
- Contaminated Units
- Fallout Prediction
- Downwind Hazard

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
1	List	FORCE	BLUEFOR OPFOR	Specifies force initiating the chemical event.
2	List	ACTION	DEFINE CHEMICAL MISSION EDIT CHEMICAL MISSION CANCEL CHEMICAL MISSION	Defines menu display options.
IF DEFINE CHEMICAL MISSION:				
3	List	DELIVERY METHOD	ARTILLERY AIR SPRAY AIR DELIVERED BOMBS	Specifies method of delivering chemical agent.
IF ARTILLERY				
4	List	TYPE OF TARGET	TARGET POINT GROUP OF TARGETS	Defines menu display options.
IF TARGET POINT:				
5	List	IDENTIFY TARGET	NEW TARGET EXISTING TARGET	Specifies whether operator is defining a new target or using a preplanned target for event definition.
IF NEW TARGET:				
6	Alpha Numeric Entry	TARGET NUMBER	5 spaces to be filled in from alpha/numeric pad.	Specifies target number.
7	Alpha Numeric Entry	TARGET LOCATION	10 spaces to be filled in from alpha/numeric pad.	Specifies UTM coordinate of target.

Figure 87. Menu: Chemical event definition.

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
8	List	FIRING UNIT	List of BLUEFOR or OPFOR firing units identified in system data base.	Defines selection of unit to execute fire mission.
9	List	WEAPON	BLUEFOR: OPFOR: 105 mm 122 mm 107 mm 130 mm 155 mm 152 mm howitzer 175 mm 152 mm gun 8 " MRL PROG	Defines selection of weapon to be fired.
10	List	AGENT	PERSISTENT NERVE PERSISTENT OLISTER NONPERSISTENT NERVE NONPERSISTENT BLOOD	Specifies type of agent being employed.
11	List	ROUNDS	BTRY 1 BM 1 BTRY 2 BM 2 BTRY 3 BM 3 BTRY 4 BM 4 BTRY 5 BM 5 BTRY 6 BM 6 BTRY 7 BM 7 BTRY 8 BM 8 BTRY 9 BM 9 BTRY 10 BM 10	Specifies number of rounds to be delivered. Input is optional. Default set to BTRY 1.
12	Alpha/ Numeric Entry	WIND SPEED	3 spaces to be filled in from alpha/numeric pad.	Specifies the wind speed in KM/HR.
13	List	WIND DIRECTION	3 spaces to be filled in from numeric pad.	Specifies wind direction in degrees. Valid range 1 to 360.
14	Alpha/ Numeric Entry	TEMPERATURE	3 spaces to be filled in from alpha/numeric pad.	Specifies the air temperature in degrees Centigrade.

Figure 87. Menu: Chemical event definition (continued).

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
15	List	TEMPERATURE GRADIENT	STABLE NEUTRAL UNSTABLE	Specifies air stability. Default set to neutral.
16	List	PRECIPITATION	CLEAR RAIN	Specifies whether or not it is raining.
17	Alpha/Numeric Entry	TIME	DD MON YR ____ (Current date displayed for edit (if required) followed by 4 spaces to be filled in with HH:MM.)	Specifies execution date and time of chemical mission.
18	List	---	IGNORE REPEAT DONE	Specifies manner of entry completion.
IF EXISTING TARGET:				
6	List	PREPLANNED TARGET	List of targets previously defined and input to the system.	Defines selection of target. NOTE: Upon selection of target, all parameters describing the target are displayed for review.
7	List	FIRING UNIT	List of BLUEFOR or OPFOR firing units identified in system data base.	Defines selection of unit to execute Fire Mission.
8	List	WEAPON	BLUEFOR: OPFOR: 105 mm 122 mm 107 mm 130 mm 155 mm 152 mm howitzer 175 mm 152 mm gun 8 " MRL FROG	Defines selection of weapon to be fired.
9	List	AGENT	PERSISTENT NERVE PERSISTENT BLISTER NONPERSISTENT NERVE NONPERSISTENT BLOOD	Specifies type of agent being employed.

Figure 87. Menu: Chemical event definition (continued).

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
10	List	ROUNDS	BTRY 1 BTRY 2 BTRY 3 BTRY 4 BTRY 5 BTRY 6 BTRY 7 BTRY 8 BTRY 9 BTRY 10	Specifies number of rounds to be delivered. Input is optional. Default set to BTRY 1.
11	Alpha/ Numeric Entry	WIND SPEED	3 spaces to be filled in from alpha/numeric pad.	Specifies the wind speed in KM/HR.
12	List	WIND DIRECTION	3 spaces to be filled in from numeric pad.	Specifies wind direction in degrees. Valid range 1 to 360.
13	Alpha/ Numeric Entry	TEMPERATURE	3 spaces to be filled in from alpha/numeric pad.	Specifies the air temperature in degrees Centigrade.
14	List	TEMPERATURE GRADIENT	NEUTRAL INVERSION LAPSE	Specifies air stability. Default set to neutral.
15	List	PRECIPITATION	CLEAR RAIN	Specifies whether or not it is raining.
16	Alpha/ Numeric Entry	TIME	DD MON YR _ _ (Current date displayed for edit (if required) followed by 4 spaces to be filled in with HH:MM values.)	Specifies execution date and time of chemical mission.
17	List	---	IGNORE REPEAT DONE	Specifies manner of entry completion.

Figure 87. Menu: Chemical event definition (continued).

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
IF GROUP OF TARGETS:				
5	List	IDENTIFY TARGET GROUP	NEW TARGET GROUP EXISTING TARGET GROUP	Specifies whether operator is defining a new target group or using a preplanned target group in event definition.
IF NEW TARGET GROUP:				
6	Alpha/Numeric Entry	GROUP DESIGNATION	3 spaces to be filled in from Alpha/Numeric pad.	Specifies designation for group of targets.
7	List	TARGETS	List of targets previously defined and input to the system.	Specifies targets belonging to group.
8	List	FIRING UNIT	List of BLUEFOR or OPFOR firing units identified in system data base.	Defines selection of unit to execute Fire Mission.
9	List	WEAPON	BLUEFOR: OPFOR: ' 105 mm 122 mm 107 mm 130 mm 155 mm 152 mm howitzer 175 mm 152 mm gun 8 " MRL PROG	Defines selection of weapon to be fired.
10	List	AGENT	PERSISTENT NERVE PERSISTENT BLISTER NONPERSISTENT NERVE NONPERSISTENT BLOOD	Specifies type of agent being employed.

Figure 87. Menu: Chemical event definition (continued).

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
11	List	ROUNDS	BTRY 1 BN 1 BTRY 2 BN 2 BTRY 3 BN 3 BTRY 4 BN 4 BTRY 5 BN 5 BTRY 6 BN 6 BTRY 7 BN 7 BTRY 8 BN 8 BTRY 9 BN 9 BTRY 10 BN 10	Specifies number of rounds to be delivered. Input is optional. Default set to BTRY 1.
12	Alpha/Numeric Entry	WIND SPEED	3 spaces to be filled in from alpha/numeric pad.	Specifies the wind speed in KM/HR.
13	List	WIND DIRECTION	3 spaces to be filled in from numeric pad.	Specifies wind direction in degrees. Valid range 1 to 360.
14	Alpha/Numeric Entry	TEMPERATURE	3 spaces to be filled in from alpha/numeric pad.	Specifies the air temperature in degrees Centigrade.
15	List	TEMPERATURE GRADIENT	STABLE NEUTRAL UNSTABLE	Specifies air stability. Default set to neutral.
16	List	PRECIPITATION	CLEAR RAIN	Specifies whether or not it is raining.
17	Alpha/Numeric Entry	TIME	DD MON YR _ _ (Current date displayed for edit (if required) followed by 4 spaces to be filled in with HH:MM).	Specifies execution date and time of chemical mission.
18	List	---	IGNORE REPEAT DONE	Specifies manner of entry completion.

Figure 87. Menu: Chemical event definition (continued).

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
IF EXISTING TARGET GROUP:				
6	List	GROUP OF TARGETS	List of groups of targets previously defined and input to the system.	Defines selection of Group of Targets. NOTE: Upon selection of Group of Targets, all parameters describing the Group are displayed for review.
7	List	FIRING UNIT	List of BLUEFOR or OPFOR firing units identified in system data base.	Defines selection of unit to execute Fire Mission.
9	List	WEAPON	BLUEFOR: OPFOR: 105 mm 122 mm 107 mm 130 mm 155 mm 152 mm howitzer 175 mm 152 mm gun 8 " MRL PROG	Defines selection of weapon to be fired.
9	List	AGENT	PERSISTENT NERVE PERSISTENT BLISTER NONPERSISTENT NERVE NONPERSISTENT BLOOD	Specifies type of agent being employed.
10	List	ROUNDS	BTRY 1 BN 1 BTRY 2 BN 2 BTRY 3 BN 3 BTRY 4 BN 4 BTRY 5 BN 5 BTRY 6 BN 6 BTRY 7 BN 7 BTRY 8 BN 8 BTRY 9 BN 9 BTRY 10 BN 10	Specifies number of rounds to be delivered. Input is optional. Default set to BTRY 1.

Figure 87. Menu: Chemical event definition (continued).

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
11	Alpha/ Numeric Entry	WIND SPEED	3 spaces to be filled in from alpha/numeric pad.	Specifies the wind speed in KM/HR.
12	List	WIND DIRECTION	3 spaces to be filled in from numeric pad.	Specifies wind direction in degrees. Valid range 1 to 360.
13	Alpha/ Numeric Entry	TEMPERATURE	3 spaces to be filled in from alpha/numeric pad.	Specifies the air temp- erature in degrees Centigrade.
14	List	TEMPERATURE GRADIENT	STABLE NEUTRAL UNSTABLE	Specifies air stability. Default set to neutral.
15	List	PRECIPITATION	CLEAR RAIN	Specifies whether or not it is raining.
16	Alpha/ Numeric Entry	TIME	DD MON YR -- (Current date display- ed for edit (if required) followed by 4 spaces to be filled in with HH:MM values.)	Specifies execution date and time of chemical mission.
17	List	---	IGNORE REPEAT DONE	Specifies manner of entry completion.
IF AIR SPRAY:	4 List	NUMBER OF AIRCRAFT	1 2 4	Specifies the number of aircraft to take part in chemical attack.

Figure 87. Menu: Chemical event definition (continued).

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
5	Numeric Entry	TOTAL SPRAY TANKS IN SORTIE	1 space to be filled in from Alpha/Numeric pad.	Specifies the total amount of chemical agent to be employed in chemical event. Each tank holds 30 gallons.
6	List	AGENT	PERSISTENT NERVE PERSISTENT BLISTER NONPERSISTENT NERVE NONPERSISTENT BLOOD	Specifies type of agent being employed.
7	Alpha/Numeric Entry	BEGINNING LOCATION	10 spaces to be filled in from Alpha/Numeric pad.	Specifies UTM coordinates of the beginning point of the chemical attack.
8	Alpha/Numeric Entry	ENDING LOCATION	10 spaces to be filled in from Alpha/Numeric pad.	Specifies UTM coordinates of the ending point of the chemical attack.
9	Numeric Entry	ALTITUDE	4 spaces to be filled in from numeric pad.	Specifies altitude of aircraft, in feet, when spraying occurs.
10	Alpha/Numeric Entry	WIND SPEED	3 spaces to be filled in from alpha/numeric pad.	Specifies the wind speed in KM/HR. Default set to 20 KM/HR.
11	List	WIND DIRECTION	3 spaces to be filled in from numeric pad.	Specifies wind direction in degrees. Valid range 1 to 360.
12	Alpha/Numeric Entry	TEMPERATURE	3 spaces to be filled in from alpha/numeric pad.	Specifies the air temperature in degrees Centigrade.
13	List	TEMPERATURE GRADIENT	STABLE NEUTRAL UNSTABLE	Specifies air stability. Default set to neutral.

Figure 87. Menu: Chemical event definition (continued).

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
14	List	PRECIPITATION	CLEAR RAIN	Specifies whether or not it is raining.
15	Alpha/ Numeric Entry	TIME	DD MON YR -- (Current date displayed for edit (if required) followed by 4 spaces to be filled in with HHMM.)	Specifies execution date and time of chemical mission.
16	List	---	IGNORE REPEAT DONE	Specifies manner of entry completion.
IF AIR DELIVERED BOMBS:				
4	Alpha/ Numeric Entry	CENTER OF TARGET AREA	10 spaces to be filled in from alpha/numeric pad.	Specifies UTM coordinate at center of area to be covered by chemical attack.
5	Numeric Entry	RADIUS OF TARGET AREA	2 spaces to be filled in from numeric pad.	Specifies radius of drop area in kilometers.
6	Numeric Entry	NUMBER OF BOMBS	2 spaces to be filled in from numeric pad.	Defines number of chemical bombs to be dropped during event.
7	Numeric Entry	HEIGHT OF BURST	3 spaces to be filled in from numeric pad.	Specifies height of burst of the chemical bombs.
8	List	AGENT	PERSISTENT NERVE PERSISTENT BLISTER NONPERSISTENT NERVE NONPERSISTENT BLOOD	Specifies type of agent being employed.
9	Alpha/ Numeric Entry	WIND SPEED	3 spaces to be filled in from alpha/numeric pad.	Specifies the wind speed in KM/HR.

Figure 87. Menu: Chemical event definition (continued).

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
10	List	WIND DIRECTION	3 spaces to be filled in from numeric pad.	Specifies wind direction in degrees. Valid range 1 to 360.
11	List	TEMPERATURE GRADIENT	STABLE NEUTRAL UNSTABLE	Specifies air stability. Default set to neutral.
12	List	PRECIPITATION	CLEAR RAIN	Specifies whether or not it is raining.
13	Alpha/ Numeric Entry	TIME	DD MON YR -- (Current date display-- ed for edit (if required) followed by 4 spaces to be filled in with HH:MM values.)	Specifies execution date and time of chemical mission.
14	List	---	IGNORE REPEAT DONE	Specifies manner of entry completion.
IP EDIT CHEMICAL MISSION:				
3	List	CHEMICAL MISSION	List of chemical missions previously defined.	Defines selection of chemical mission to be updated or modified. Missions shall be identified by time, target, delivery method and chemical agent. NOTE: Upon selection of mission, all parameters describing the chemical mission are displayed for review.
4	List	SELECT PARAMETER FOR EDIT	List of chemical mission parameters which are available for edit.	Allows operator to update/modify chemical mission entries.

Figure 87. Menu: Chemical event definition (continued).

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
5	List	---	IGNORE REPEAT DONE	Specifies manner of entry completion.
IP CANCEL CHEMICAL MISSION:				
3	List	CHEMICAL MISSION	List of chemical missions previously defined.	Defines selection of chemical mission to be cancelled. Missions shall be identified by time, target and chemical agent.
4	List	---	IGNORE REPEAT DONE	Specifies manner of entry completion.

Figure 87. Menu: Chemical event de-initiation (concluded).

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
1	List	FORCE	BLUEFOR OPFOR	Defines menu display options.
2	List	TYPE	NUCLEAR CHEMICAL	Defines type of decontamination.
IF NUCLEAR:				
3	List	UNIT	List of nuclear contaminated unit in accordance with force selected above.	Specifies unit that was decontaminated.
4	List	---	IGNORE REPEAT DONE	Specifies manner of entry completion.
IF UNIT:				
4	List	UNIT	List of units in accordance with the force selected.	Specifies unit that was decontaminated for nuclear radiation.
5	List	---	IGNORE REPEAT DONE	Specifies manner of entry completion.
IF CHEMICAL:				
3	List	UNIT	List of units in accordance with the force selected.	Specifies unit that was decontaminated.
4	List	---	IGNORE REPEAT DONE	Specifies manner of entry completion.

Figure 88. Menu: Decontamination.

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
1	List	FORCE	BLUEFOR OPFOR	Defines menu display options.
2	List	UNIT	A list of notional units of the force selected.	Specifies unit for which vehicle status data is to be entered.
3	List	VEHICLE TYPE	FOR BLUEFOR: TANK APC MORT CARR, 81 mm MORT CARR, 4.2 CARR, CP TOW VULCAN STINGER 155 HOW RECOVERY VEHICLE TRUCK, UTL 1/4 TON TRUCK, LMB 1 1/4 TON TRUCK, CGO 1 1/4 TON TRUCK, CGO 2 1/2 TON TRUCK, CGO 5 TON TRUCK, CGO 8 TON TRUCK, FUEL 1200 GALLONS TRUCK, FUEL 2500 GALLONS TRUCK, WRECK 10 TON BULLDOZER AVLB CEV GSR FOR OPFOR: T-72 BNP BRDM-2 MTLB TSU23-4	Specifies type of vehicle for which casualty information is being entered.

Figure 69. Menu: Vehicle status.

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
4	Numeric	CASUALTIES	JEEP TRUCK 122 HOW BATTLE LOSS -- -- -- -- MAINT LOSS -- -- -- -- ADMIN LOSS -- -- -- --	Specifies the number lost due to battlefield events maintenance and admini- strative requirements. Input may consist of either positive or nega- tive values (to allow for restoration of vehicles). Upon entry completed, operator prompted for vehicle type.
5	List	---	IGNORE REPEAT DONE	Specifies manner of entry completion.

Figure 89. Menu: Vehicle status (concluded).

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
1	List	FORCE	BLUEFOR OPFOR	Defines menu display options.
2	List	UNIT	A list of notional units of the force selected.	Specifies unit for which personnel status data is to be entered.
3	Numeric Entry	CASUALTIES	WIA -- KIA -- MIA -- CAPT'D --	Specifies number of personnel wounded in action, killed in action, missing in action and captured. Input may consist of positive or negative values (to allow for restoration/resurrection of personnel).
4	List	---	IGNORE REPEAT DONE	Specifies manner of entry completion.

Figure 90. Menu: Personnel status.

- Reported Intelligence

Figure 91 depicts the set of symbology which shall be used by the ECC/TAF history.

The ECC controller shall have the capability of displaying selected units from either the live or simulated battalion through a task organized matrix similar to that used for the 500 player ES system. This matrix shall, however, control the display of three separate BLUEFOR battalions and three Motorized Rifle Regiments.

The ECC controller shall also have the capability of entering and manually controlling notional units which are not participants in either the live or simulated histories. These units shall be for display purposes only and shall be controlled by a single button on the master menu.

The display of symbology other than units shall be controlled by appropriate buttons on the master menu.

3.3.5.4 Statistical And Alphanumeric Displays - Displays which describe performance and status during an exercise shall be provided. Both instantaneous (snapshot) and cumulative data shall be displayable. Additionally, this data shall be available in either tabular or graphical formats.



















Performance and status displays shall be presented on the alphanumeric screen. A performance/status display menu which defines all such displays available for selection, shall be provided.

3.3.5.4.1 Unit Tactical Performance - The computed kernel statistics representing measures of tactical performance for exercise units in the ES shall be integrated with similar performance data provided by the CBS. These data, on a force basis, shall be further processed for the development of the brigade level performance statistics. The displays shall be specified at a later date.






3.3.5.4.2 Unit Status Displays - The following unit status displays, as defined in paragraph 3.3.4.8, shall be provided:

- Task Organization
- Fire Support Log
- Minefield Event

UNIT SYMBOLS

	AIR DEFENSE		MECHANIZED INFANTRY		MEDICAL
	ARMOR		ANTITANK		SIGNAL (COMMUNICATIONS)
	ARTILLERY		INFANTRY		TRANSPORTATION
	SELF-PROPELLED ARTILLERY		CHEMICAL DEFENSE		ARMY AVIATION
	AIRBORNE INFANTRY		ARMORED CAVALRY		ELECTRONIC WARFARE
	AIR CAVALRY		ENGINEER		SUPPLY AND SERVICE

MISCELLANEOUS SYMBOLS

	CST	}	COMBAT TRAINS	MECH INF TASK FORCE
	CST			ARMOR TASK FORCE
	FLD	}	FIELD TRAINS	MECH INF TASK FORCE
	FLD			ARMOR TASK FORCE
	FIELD HEADQUARTERS			

ECHELON SYMBOLS



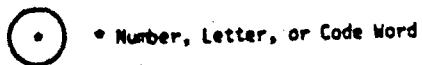
PLATOON	• • •	BRIGADE	X
COMPANY		DIVISION	X X
BATTALION		CORPS	X X X
REGIMENT			
TASK FORCE/ COMPANY TEAM		e.g.	 MECH INF TASK FORCE

Figure 91. ECC symbology.

CONTROL MEASURES POINTS

1. Checkpoint



2. Coordination Point



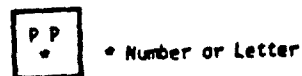
3. Start Point (SP)



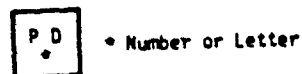
4. Release Point (RP)



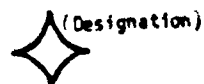
5. Passage Point (PP)



6. Point of Departure (PD)



7. Remote Sensor (REMS)



8. Preplanned Target



LINES

1. Basic Line



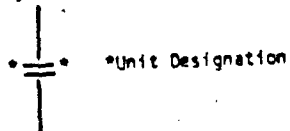
2. Direction of Attack or Route



3. Axis of Advance (AA)



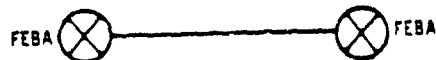
4. Boundary Line



5. Forward Edge of the Main Battle Area (FEBA)



6. Actual Trace of FEBA



7. Line of Departure is Line of Contact (LD/LC)



8. Limit of Advance (LOA)

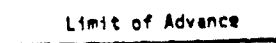


Figure 91. ECC symbology (continued).

CONTROL MEASURES

LINES

9. Line of Departure (LD)

LD ————— LD

10. Phase Line (PL)

PL ————— PL
(Name) (Name)

11. Fire Support Coordination Line (FSCL)

FSCL (Unit Designation)
050030Z APR

12. Restrictive Fire Line (RFL)

RFL (Unit Designation)
170030Z APR

13. Tank Ditch

(No.) 

14. Coordinated Fire Line (CFL)

CFL (Unit Designation)
120030Z APR

15. Probable Line of Deployment

PLD - - - - - PLD

16. Main Supply Route (MSR)

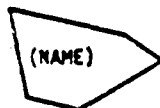
MSP (Name)

AREAS

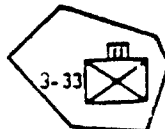
1. Basic Area



2. Area of Operation (AO)



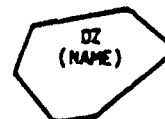
3. Assembly Area (AA)



4. Attack Position



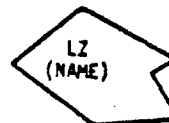
5. Drop Zone (DZ)



6. Fire Support Base (FSB)



7. Landing Zone (LZ)



8. Forward Arming and Refueling Point (FARP)



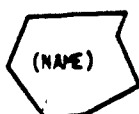
Figure 91. ECC symbology (continued).

CONTROL MEASURES
AREAS

9. Objective



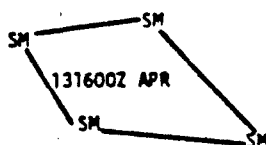
10. Patrol Base



11. Pickup Zone (PZ)



12. Scatterable Minefield (SM)

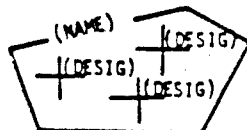


- DTG designates self-destruction time.
- Symbols for types of mines (antitank, antipersonnel) are entered within boundaries.

13. Support Area



14. Group of Targets



15. Restrictive Fire Area (RFA)



16. No Fire Area (NFA)



17. Contaminated Area



18. Battle Position







19. Minefield

- a. Gap
- b. Passage Lane



Figure 91. ECC symbology (continued).

ENGAGEMENT VECTORS

	UNIT ENGAGEMENT
	INDIRECT FIRE IMPACT POINT
	MORTAR FIRE IMPACT POINT
	SMOKE MISSION IMPACT POINT

INTELLIGENCE










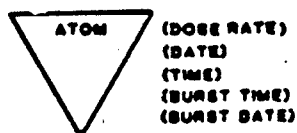
	TANK		TOW SAGGER		HELICOPTER
	APC BMP BROM		155 MM GUN 152 MM HOWITZER 122 MM HOWITZER		FIGHTER
	TRUCK		MANPACK		Remote Sensor (REMS)

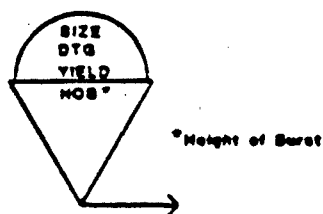
Figure 91. ECC symbology (continued).

NUCLEAR

1. Radiological Marker



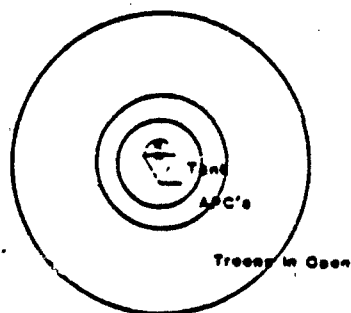
2. Nuclear Explosion



3. Radiation Contours



4. Prompt Effects Display



5. Fallout Prediction

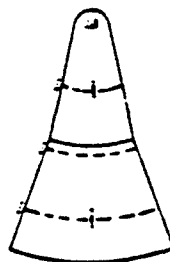
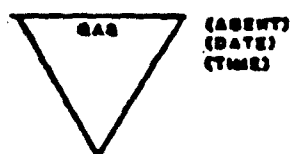


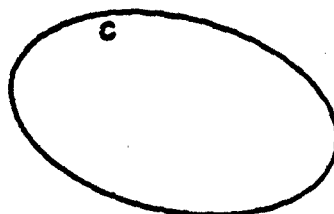
Figure 91. ECC symbology (continued).

CHEMICAL

1. Chemical Marker



2. Chemically Contaminated Area



3. Chemical Hazard Predictor

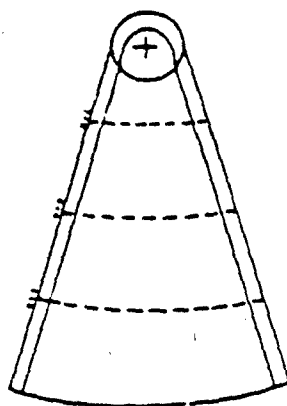


Figure 91. ECC symbology (concluded).

- Vehicle Status by Unit
- Personnel Status by Unit
- Casualty Summary by Unit
- Intelligence Log by Force
- Resource Allocation Log
- Prescheduled Events Log
- NBC Report Log
- Decontamination Log
- OC Assessment of Unit Effectiveness

3.3.5.5 Alerts And Free Format Messages - Alert messages are fixed format messages which shall be generated when key events are encountered that should be brought to the immediate attention of the controller. The definition of alert message fields adhere to the following conventions:

- Items which are displayed in [...] are variable depending on the situation and status surrounding the alert message.
- Items which are displayed in <...> indicate this field may be repeated.
- All data items in CAPITAL LETTERS shall be supplied whenever the alert message is displayed.
- [Time] shall be expressed in hours:minutes:seconds. Although not displayed, each time shall have a date (day) associated with it.
- [Unit Identification] is composed of the unit's force designation (B = BLUEFOR, R = OPFOR, W = Observer/Controller).

The following subsections define specific alert message formats.

3.3.5.5.1 Unit Engagements - These messages shall provide data informing the operator that a live EMC/TAF or a simulated unit engagement has occurred. The general format of the message shall be as follows:

[Time] : [Unit ID] : ENGAGED

e.g.,
10:24:14 : 1/A/3-77 : ENGAGED : 2/1/1-44

3.3.5.5.2 Indirect Firings - These messages shall be provided to inform the operator of the status of an impending indirect fire mission. In the event the firer is found to be out of range of its target, an alert message shall be displayed identifying the mission and its scheduled execution time. The format of the message shall be as follows:

[Time] : [Firing Unit;Tgt#/Coord;Time of Execution] :
OUT OF RANGE

e.g.,
10:24:00 : A/4-37;AJ002/NJ34566139;10:25:00 : OUT OF RANGE

For all missions determined to be within valid range, a message describing the mission and its scheduled execution time shall be displayed 30 seconds prior to scheduled mission execution. The format of the message shall be as follows:

[Time] : [Firing Unit] : [Weapon] : [Shell/Fz] :
[Tgt#/Coord] : [Time of Execution]

e.g.,
10:24:30 : A/4-37 : 155MM : ILLUM/PD : AJ002/NJ34566139
: 10:25:00

3.3.5.5.3 Nuclear Events - For each nuclear event scheduled to occur, a message describing the time the event is to occur, the target location, the height of burst and the yield shall be displayed. The message shall be displayed 30 minutes and 5 minutes prior to the event. The format of the message shall be as follows:

[Time] : [Force] : NUCLEAR EVENT SCHEDULED
TO OCCUR AT : [Time of Burst] : [Ground Zero] :
[Height of Burst] : [Yield]

In the event the operator chooses to cancel a scheduled nuclear event, a message identifying the nuclear event shall be displayed. The format of the message shall be as follows:

[Time] : NUCLEAR EVENT [Event ID] : CANCELLED

3.3.5.5.4 Chemical Events - For each chemical event scheduled to occur, a message describing the time the event is to occur, the target location and the chemical agent

shall be displayed 30 minutes and 5 minutes prior to the scheduled event. The format of the message shall be as follows:

[Time] : [Force] : CHEMICAL EVENT SCHEDULED
TO OCCUR AT [Time of Event] : [Location] : [Agent]

If the operator cancels a scheduled chemical event, a message identifying the event shall be displayed. The format of the message shall be as follows:

[Time] : CHEMICAL EVENT : [Event ID] : CANCELLED

The location of all instrumented and uninstrumented chemical alarms shall be available for display. A message identifying the alarm to be in a chemically contaminated area shall be displayed when the instrumented unit enters the contaminated area, or when the uninstrumented chemical alarm (emplaced alarms) resides in an area which has become chemically contaminated. The format of the message shall be as follows:

[Time] : CHEMICAL ALARM [Alarm ID] IN CONTAMINATED
AREA : ACTIVATE ALARM

3.3.5.5.5 Prescheduled Events - The prescheduled events entered by the ECC operator through the prescheduled events menu shall be displayed at the operator specified time. The format for these cueing prompts shall be as follows:

[Time] : [Message Originator] : [Message Type] :
[Message Code Name]
[Textual Message, up to 80 characters per line with a
maximum of three lines of text]

e.g.,
10:24:35 : Division Role Player/Station 13 : CC : BCOMOVE
B Company Commander to move his command post at 12:00:00.

e.g.,
10:24:35 : Intell Analyst/Station 13 : Intell : BCOLOC
B Company Commander moved his command post at 12:00:00 to
NJ34566139.

3.3.5.5.6 Resource Allocation - The resource allocation messages entered by the ECC operator through the resource allocation interactive menu shall be displayed identifying the unit supplying the resource(s), the unit to receive the resource(s), the supply mission name, and a list of the supplies to be transferred. The format for displaying the

message shall be as follows:

[Time] : [Donor Unit] : [Donor Unit Location] :
[Recipient Unit] : [Recipient Unit Location] :
[Supply Mission] <[Resource] : [Level]>
e.g.,
10:24:35 : A/4-37 : NJ34566139 : B/4-37 : NJ34566666 :
ABFUEL GAS : 50 : DIESEL : 100

The means to enter free format messages into the data base of an open exercise segment, during both real-time and historian mode operations, shall also be available. Free format messages shall be entered through the alphanumeric terminal and stored in the data base in accordance with either an operator specified time or the exercise time as displayed on the tactical display at the time of message entry.

The Division role players may enter free format messages to tag various key events performed by brigade. These data include exercise status elements that are not currently available via field or simulated automated storage capabilities. For example, reports generated by the brigade may be entered as required. In addition, time-tagged events to be displayed as a cueing device shall be entered as free format messages.

Free format messages shall consist of no more than three lines of text with 80 characters per line. Header information (unit ID, controller ID and message subject, etc.) should, as a matter of standard operating procedure, be included as a part of the free format message.

IDCC shall provide the means to filter (for display purposes) alert messages by tactical and operational categories. Within these categories, messages shall be ordered chronologically.

• Tactical Categories

- Maneuver
- Fire Support
- Intelligence
- Mobility/Counter mobility
- Combat Service Support
- Air Defense

- Command, Control and Communications
- Operational Categories
 - Spectrum Monitoring
 - System Status
 - Video Data Log
 - COMMO Data Log
 - Digital Data Log
- Operator Station ID

3.3.5.6 AAR Processing - The same AAR capabilities specified in the Requirements Design Specification for the 500 Player CIS system shall be provided at the ECC stations. These features shall be used to create AARs for the brigade and CPX battalion TOCs from the ECC/TAF history. Special Elements of Information (EIs) shall also be defined for OC assessment of the CPX battalion and brigade command/staff actions. Reports shall also be provided which show the effectiveness of the units based upon higher level command.

The report displays in support of the Summary AAR shall incorporate data across several or all exercise segments. The report shall be designed to segregate information by battalion. These graphical displays shall be made available during "null" segments solely.

3.4 DETAILED FUNCTIONAL REQUIREMENTS FOR EMC/TAF

The functions of the EMC/TAF group for the live battalion shall be as defined in the Requirements Design Specification for the NTC CIS (500 Player System) Volume 1 and the Requirements Design Specification for the addition of Nuclear and Chemical Capabilities to the National Training Center (NTC) Core Instrumentation Subsystem (CIS), dated 28 March 1983.

The primary function of each EMC/TAF facility shall be the training of a single battalion task force in combat operations. The IBCCS concept shall provide the structure for training more completely in integrated battlefield operations by providing division level role playing and, if desired, notional units for simulating a larger combat situation.

In order to provide a larger, brigade-level context for integrated battlefield training, the EMC/TAP shall provide certain data to the ECC/TAP for use in the combined, brigade-level history.

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